Manual of Classification of Agricultural and Forestry Research

Revision IV

Classifications
used in the
Current Research
Information System (CRIS)

Science and Education in Agriculture
USDA/Universities

MANUAL OF CLASSIFICATION

OF

AGRICULTURAL AND FORESTRY RESEARCH

Classifications used in the Current Research Information System (CRIS)

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MANUAL OF

CLASSIFICATION OF AGRICULTURAL AND FORESTRY RESEARCH

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INTRODUCTION

The Manual of Classification of Agricultural and Forestry Research is the authority for classifying research projects in the Current Research Information System (CRIS). It is specifically intended for use in preparing Form AD-417, the classification code sheet submitted on each research work unit/project description documented in CRIS. The research classification serves as the framework for management and technical reports generated by CRIS for use in research planning, budgeting, and coordination, and it is used routinely in subject matter retrieval. The annual publication, Inventory of Agricultural Research, is a compilation of management data which is based on the CRIS research classification.

THE RESEARCH CLASSIFICATION SCHEME. Classifications used in CRIS are of two types: (1) Primary Classification, and (2) Special Classification.

Primary Classification. Consists of four series of broad classifications:

- o Research Problem Area (Table A)
- o Activity (Table B)
- o Commodity, Resource, or Technology not Associated with Specific Commodities (Table C)
- o Field of Science (Table D)

Primary classifications are entered in fields 36-47 on Form AD-417. Each project in CRIS must be coded to at least one of each of the four series of primary classification. To allow for the identification of multiple objectives of a research project, a maximum of 12 codes from each series is permitted on a single project.

Special Classification. This is a series of classifications which permit more specific identification of research. They reflect local, regional, national or discipline interests in particular areas of research. Subcommodities are also treated as special classifications on Form AD-417. There are currently six series of special classifications:

- o Special Categories (Table E)
- o Pesticide Targets (Table F)
- o Water Resources Research (Table G)
- o Agricultural Energy Research and Development (Table H)
- o Integrated Pest Management (IPM) Research (Table I)
- o Subcommodities (from Table C)

Special classifications are entered in fields 48-77 on Form AD-417. A single project may be coded to none or a maximum of 30 different codes from any of the six series.

GUIDE TO COMPLETING FORM AD-417

PRIMARY CLASSIFICATION--Fields 36-47.

All primary classifications in CRIS are assigned codes which are entered in fields 36-47 on Form AD-417. (See Tables A through D for codes associated with each classification.) Each project must be coded to at least one Activity, one Commodity, one Field of Science, and one Research Problem Area (RPA); however, a maximum of 12 codes from each of the primary classifications is permitted on a single project.

RESEARCH PROBLEM AREA (RPA) - TABLE A. The most important series of research classifications is the classification by Research Problem Area (RPA). The 98 RPA's are arranged in nine goals of the original long range study, "A National Program of Research for Agriculture."

ACTIVITY - TABLE B. Activities describe the purpose or nature of the research effort and provide either a broader or more specific focus for one or more related RPA's.

COMMODITY, RESOURCE, or TECHNOLOGY NOT ASSOCIATED WITH SPECIFIC COMMODITIES - TABLE C. Provides an additional facet for research classification. It is generally the object of the research; e.g., the class of plant, animal, organism, material, process, procedure, etc., under investigation.

FIELD OF SCIENCE - TABLE D. Lists the disciplines involved in conducting the research. It consists essentially of fields of science used by the National Science Foundation for various government-wide reports.

Multidimensional Classification. The selection of classification codes on individual projects is based on a four-part, multidimensional scheme which requires one of each of the four series of classifications (Activity, Commodity, Field of Science, and RPA) to be entered in the same field or line of primary classification. Specifically, for each RPA coded in column 7 in fields 36-47 on Form AD-417, there must be corresponding codes for Activity in column 1, Commodity in column 3, and Field of Science in column 5.

Classification Combinations. In addition to the required four-part classification by Activity, Commodity, Field of Science and RPA, selection of codes must be made in accordance with guidelines established for each RPA. Specifically, only certain Activities and Commodities may be listed along with a particular RPA in the same field or line of classification. Use of Activity or Commodity codes other than those listed in the guidelines for the RPA will invalidate the classification and, on entry in CRIS, cause the system to reject the entire project. Activities and Commodities acceptable in combination with each RPA are listed in the following sections of this manual:

RESEARCH PROBLEM AREAS (RPA'S) - DESCRIPTIONS (See Classification Guidelines for each RPA)
INDEX OF RPA'S BY ACTIVITY
INDEX OF RPA'S BY COMMODITY, RESOURCE AND TECHNOLOGY

There is no limitation on the choice of Field of Science--any Field of Science may be used with any Activity x Commodity x RPA combination.

Deviations from the Classification. The classification combinations listed in this manual may not cover all logical combinations of Activity, Commodity, and RPA which a research effort may suggest. In the event a project cannot be classified to one or more of these combinations, a request for a new combination may be made to CRIS. This should be initiated at the time the AD-416 and AD-417 for a new project or revision are prepared. Complete the AD-417 using the new combination, and on all copies of the AD-417, across blank columns or in available space, write, "REQUEST FOR NEW COMBINATION."

Classification Percentages. In classifying projects to the primary classification, each line of classification must be assigned a percentage (weighted) to indicate the portion of effort on the project directed to each Activity x Commodity x Field of Science x RPA combination. This percentage, called the "product percentage," is arrived at by first assigning individual percentages to each Activity, Commodity, and Field of Science code in columns 2, 4, and 6, and multiplying the individual percentages across the same line. The product of columns 2x4x6 is entered in column 8. When the individual percentages are correctly assigned, the sum of all product percentages in column 8 will equal 100.

Primary Classification Procedure-Fields 36-47

1. Selection of Activity, Commodity, Field of Science and RPA.

- First, review the titles of the RPA's (Table A) and note the RPA which best describes the project. Some projects may require more than one RPA.

- Second, turn to the detailed description(s) of the RPA(s) to confirm your selection.

- Third, review the Classification Guidelines for the selected RPA(s) to determine which Activities and Commodities may be combined with the RPA(s) in the same field or line of classification. The Classification Guidelines are appended to the detailed descriptions for each RPA.

- For each RPA, first select and enter one or more different Activity codes (Table B) in the Activity column (column 1) and the corresponding RPA in the RPA column (column 7).

- For each Activity-RPA combination, select and enter one or more different primary Commodity codes (Table C) in the Commodity column (column 3).

- For each Activity-Commodity-RPA combination, select and enter one or more Field of Science codes (Table D) in the Field of Science column (column 5).

2. Assignment of Percentages.

- Percentages are assigned first to all Activities listed. Enter percentages in column 2. **THE SUM OF THE PERCENTAGES ASSIGNED TO DIFFERENT ACTIVITIES FOR ALL THE DIFFERENT ACTIVITY-RPA COMBINATIONS MUST EQUAL 100 PERCENT.**

- Percentages are next assigned to the Commodities for each Activity listed. Enter percentages in column 4. **THE SUM OF THE PERCENTAGES ASSIGNED TO DIFFERENT COMMODITIES FOR THE SAME ACTIVITY-RPA COMBINATION MUST EQUAL 100 PERCENT.**

- Next, percentages are assigned to the Fields of Science. Enter percentages in column 6. **THE SUM OF PERCENTAGES FOR ALL FIELDS OF SCIENCE FOR THE SAME ACTIVITY-COMMODITY-RPA COMBINATION MUST EQUAL 100 PERCENT.**

Percentages assigned to individual Activity, Commodity, and Field of Science codes must be expressed as whole numbers, not as fractions or decimals, and each should be at least 10 percent.

3. Completing the Matrix.

- Next, fill in any partially completed lines of the classification matrix for columns 1 through 7 by duplicating codes and percentages assigned to preceding lines.

- Finally, perform the multiplication of percentages in columns 2x4x6 across each line and enter the product in column 8. Each of the product percentages in column 8 should not be less than 10 percent and must be expressed as a whole number--no fractions or decimals (round up or down as needed). **THE SUM OF ALL PERCENTAGES IN COLUMN 8 MUST EQUAL 100 PERCENT.**

See Figures 1 and 2 for a step-wise approach for assigning percentages and completing the matrix.

U.S. OEPARTMENT OF AGRICULTURE

RESEARCH WORK UNIT/PROJECT DESCRIPTION-CLASSIFICATION OF RESEARCH

U.S. OEPT. OF AGRICULTURE, STATE AGRICULTURAL EXPERIMENT STATION AND OTHER INSTITUTIONS

DATE (Day, Month, Year)

1. ACCESSION NO.	AGENCY IOENTIFICATION NO. 2. 3. 4.	5. WORK UNIT/PROJECT NO.	31. HATCH MARKETING ☐ Yes ☐ No %

32. BASIC RESEARCH %	33. APPLIED RESEARCH %	34. OEVELOPMENT EFFORT %	35. FORESTRY %

CLASSIFICATION BY ACTIVITY, COMMODITY, SCIENCE, AND RESEARCH PROBLEM AREA

	ACTIVITY		COMMODITY		SCIENCE		RESEARCH PROBLEM AREA	PROOUCT OF (2) X (4) X (6)
	CODE (1)	% (2)	CODE (3)	% (4)	CODE (5)	% (6)	CODE (7)	% (8)
36.	4900	50	1400	50	0512	40	307	
37.					1312	60		
38.			1800	50	0512	50		
39.					1312	50		
40.	5000	50	1400	40	0212	100	309	
41.			1800	60	0212	100		
42.	STEP 1	The sum of percentages assigned to different Activities for the						
43.		different Activity-RPA combinations must equal 100 percent.						
44.		The sum of percentages assigned to different Commodities						
45.		for the same Activity-RPA combination must equal 100 percent.						
46.		The sum of percentages for all Fields of Science for the same						
47.		Activity-Commodity-RPA combination must equal 100 percent.						

SPECIAL CLASSIFICATION

Fields 48-77 are used to identify special areas of research such as Pollution, Health and Medical, Tobacco-Health, Weather, Nuclear Radiation, Poverty, Natural Beauty, Sub-Commodities, Pesticide Targets, Water Resources, Energy, Home Economics, Sub-Activities (SEA/AR) and Special Research Programs (SEA/AR). Refer to your agency manual for specific codes and instructions.

CODE	%	CODE	%	CODE	%	CODE	%	CODE	%
48.		54.		60.		66.		72.	
49.		55.		61.		67.		73.	
50.		56.		62.		68.		74.	
51.		57.		63.		69.		75.	
52.		58.		64.		70.		76.	
53.		59.		65.		71.		77.	

79. COOPERATORS

A ☐ USDA B ☐ Other Federal Agencies C ☐ Industry and other O ☐ State

COOPERATING OEPARTMENTS WITHIN STATE PERFORMING INSTITUTION

80.

81.

82.

83. REPORTING DEPARTMENT WITHIN STATE PERFORMING INSTITUTION

AD FORM 417
JUN 1979

FIGURE 1

U.S. DEPARTMENT OF AGRICULTURE

RESEARCH WORK UNIT/PROJECT DESCRIPTION-CLASSIFICATION OF RESEARCH

U.S. DEPT. OF AGRICULTURE, STATE AGRICULTURAL EXPERIMENT STATION AND OTHER INSTITUTIONS

DATE (Day, Month, Year)

1. ACCESSION NO.	AGENCY IDENTIFICATION NO. 2. 3. 4.	5. WORK UNIT/PROJECT NO.	31. HATCH MARKETING ☐ Yes ☐ No %

32. BASIC RESEARCH %	33. APPLIED RESEARCH %	34. DEVELOPMENT EFFORT %	35. FORESTRY %

CLASSIFICATION BY ACTIVITY, COMMODITY, SCIENCE, AND RESEARCH PROBLEM AREA

	ACTIVITY		COMMODITY		SCIENCE		RESEARCH PROBLEM AREA	PRODUCT OF (2) X (4) X (6)
	CODE (1)	% (2)	CODE (3)	% (4)	CODE (5)	% (6)	CODE (7)	% (8)
36.	4900	50	1400	50	0512	40	307	10
37.	4900	50	1400	50	1312	60	307	15
38.	4900	50	1800	50	0512	50	307	13
39.	4900	50	1800	50	1312	50	307	12
40.	5000	50	1400	40	0212	100	309	20
41.	5000	50	1800	60	0212	100	309	30
42.								
43.	STEP 2	Example of a properly completed primary classification matrix.						
44.								
45.		The sum of the product percentages in column 8 must equal 100 percent.						
46.								
47.								

SPECIAL CLASSIFICATION

Fields 48-77 are used to identify special areas of research such as Pollution, Health and Medical, Tobacco-Health, Weather, Nuclear Radiation, Poverty, Natural Beauty, Sub-Commodities, Pesticide Targets, Water Resources, Energy, Home Economics, Sub-Activities (SEA/AR) and Special Research Programs (SEA/AR). Refer to your agency manual for specific codes and instructions.

CODE	%	CODE	%	CODE	%	CODE	%	CODE	%
48.		54.		60.		66.		72.	
49.		55.		61.		67.		73.	
50.		56.		62.		68.		74.	
51.		57.		63.		69.		75.	
52.		58.		64.		70.		76.	
53.		59.		65.		71.		77.	

79. COOPERATORS

A ☐ USDA B ☐ Other Federal Agencies C ☐ Industry and other D ☐ State

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AD FORM 417
JUN 1979

FIGURE 2

SPECIAL CLASSIFICATIONS-Fields 48-77.

Codes for special classifications are entered in fields 48-77 on Form AD-417. Special classifications and associated codes are listed in Tables E through I. Subcommodity codes are subsumed under the primary Commodity codes in Table C. Except for subcommodities, special classifications are treated independently of primary classifications; i.e., assignment of special classification codes (other than subcommodities) in fields 48-77 is made without regard to codes or percentages for primary classifications in Fields 36-47.

SPECIAL CATEGORIES - TABLE E. Includes a number of research areas of special national interest.

PESTICIDE TARGETS - TABLE F. Consists of five "Pesticide Targets" for identification of specific pesticide and pest control activities.

WATER RESOURCES RESEARCH - TABLE G. Provides a means to identify water resources research. Consists of categories developed by the Committee on Water Resources Research (COWRR).

AGRICULTURAL ENERGY RESEARCH AND DEVELOPMENT - TABLE H. Consists of the classification categories developed by the National Task Force on Agricultural Research and Development and described in the report, "A National Program of Agricultural Energy Research and Development," September 1976.

INTEGRATED PEST MANAGEMENT (IPM) RESEARCH - TABLE I. Consists of the research program elements of the Program Classification System for IPM contained in the report, "Integrated Pest Management Programs of the Science and Education Agencies."

SUBCOMMODITIES - (From TABLE C). Subcommodities are subsumed under the related prime Commodities in Table C. Subcommodity codes retain the first two digits of the related prime Commodities. Not all prime Commodities have subcommodities.

Note: The special classification for Home Economics Research, included previously as Table G in Revision III of the Manual, has been dropped from the CRIS classification.

Special Classification Procedure-Fields 48-77.

Selection of Special Classifications (Tables E - I). Codes for special classifications are entered in any of the 30 fields from 48 through 77. Individual field numbers are not assigned to particular classifications. However, to facilitate the selection and subsequent data entry of codes, classifications from the same series should be grouped and coding begun in field 48 and continued in sequentially numbered fields.

Assignment of Percentages. Each special classification must be accompanied by a percentage which reflects the portion of effort on the project associated with the particular area coded. Except for subcommodities, percentages bear no fixed relationship to percentages assigned to the primary classification or other series of special classifications.

The percentage on a single code must not exceed 100, and the sum of percentages for codes within the same series must not exceed 100. EXCEPTION: Each of the Special Categories (Pollution Related, Health and Medical Related, etc.) are considered unrelated and mutually exclusive for classification purposes, and the percentage assigned to each of the Special Categories stands alone. Percentages associated with any one code should not be less than ten percent.

Selection of Subcommodities (from Table C). When Table C shows subcommodities subsumed under a prime Commodity that is coded in fields 36-47, one or more of the subcommodity codes must be entered in fields 48-77. Prefix each subcommodity code with the letter "C".

Assignment of Subcommodity Percentages. Percentages assigned to subcommodities bear a fixed relationship to the primary Commodities coded in fields 36-47. The sum of the percentages for related subcommodities must equal the sum of the product percentages in column 8 that are associated with the prime Commodity. (Figure 3 illustrates this relationship.)

U.S. DEPARTMENT OF AGRICULTURE

DATE *(Day, Month, Year)*

RESEARCH WORK UNIT/PROJECT DESCRIPTION-CLASSIFICATION OF RESEARCH

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1. ACCESSION NO.	AGENCY IDENTIFICATION NO. 2. 3. 4.	5. WORK UNIT/PROJECT NO.	31. HATCH MARKETING ☐ Yes ☐ No %

32. BASIC RESEARCH %	33. APPLIED RESEARCH %	34. DEVELOPMENT EFFORT %	35. FORESTRY %

CLASSIFICATION BY ACTIVITY, COMMODITY, SCIENCE, AND RESEARCH PROBLEM AREA

	ACTIVITY		COMMODITY		SCIENCE		RESEARCH PROBLEM AREA	PRODUCT OF (2) X (4) X (6)
	CODE (1)	% (2)	CODE (3)	% (4)	CODE (5)	% (6)	CODE (7)	% (8)
36.	4900	50	1400	50	0512	40	307	10
37.	4900	50	1400	50	1312	60	307	15
38.	4900	50	1800	50	0512	50	307	13
39.	4900	50	1800	50	1312	50	307	12
40.	5000	50	1400	40	0212	100	309	20
41.	5000	50	1800	60	0212	100	309	30
42.								
43.	Note: The sum of percentages for related subcommodities must equal the sum of percentages in column 8 for the prime Commodity.							
44.								
45.								
46.								
47.								

SPECIAL CLASSIFICATION

Fields 48 77 are used to identify special areas of research such as Pollution, Health and Medical, Tobacco-Health, Weather, Nuclear Radiation, Poverty, Natural Beauty, Sub-Commodities, Pesticide Targets, Water Resources, Energy, Home Economics, Sub-Activities (SEA/AR) and Special Research Programs (SEA/AR). Refer to your agency manual for specific codes and instructions.

CODE	%	CODE	%	CODE	%	CODE	%	CODE	%
48. C1810	40	54. IPMB	40	60.		66.		72.	
49. C1820	15	55.		61.		67.		73.	
50. XWR	30	56.		62.		68.		74.	
51. W2B	50	57.		63.		69.		75.	
52. W2D	50	58.		64.		70.		76.	
53. E1A1	20	59.		65.		71.		77.	

79. COOPERATORS

A ☐ USDA B ☐ Other Federal Agencies C ☐ Industry and other D ☐ State

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FIGURE 3

RESEARCH PROBLEM AREA (RPA)

RPA	TITLE	Page
	GOAL I: INSURE A STABLE AND PRODUCTIVE AGRICULTURE FOR THE FUTURE THROUGH WISE MANAGEMENT OF NATURAL RESOURCES	
101	Appraisal of Soil Resources	39
102	Soil, Plant, Water, Nutrient Relationships	40
103	Management of Saline and Sodic Soils and Salinity	41
104	Alternative Uses of Land	42
105	Conservation and Efficient Use of Water	43
106	Efficient Drainage and Irrigation Systems and Facilities	44
107	Watershed Protection and Management	45
108	Economic and Legal Problems in Management of Water and Watersheds	46
109	Adaptation to Weather and Weather Modification	47
110	Appraisal of Forest and Range Resources	48
111	Biology, Culture and Management of Forests and Timber-Related Crops	49
112	Improvement of Range Resources	51
113	Remote Sensing	52
114	Research on Management of Research	53
	GOAL II: PROTECT FORESTS, CROPS AND LIVESTOCK FROM INSECTS, DISEASES AND OTHER HAZARDS	
201	Control of Insects Affecting Forests	55
202	Control of Diseases, Parasites and Nematodes Affecting Forests	56
203	Prevention and Control of Forest and Range Fires	57
204	Control of Insects, Mites, Slugs and Snails on Fruit and Vegetable Crops	58
205	Control of Diseases and Nematodes of Fruit and Vegetable Crops	59
206	Control of Weeds and Other Hazards to Fruit and Vegetable Crops	60
207	Control of Insects, Mites, Snails and Slugs Affecting Field Crops and Range	61
208	Control of Diseases and Nematodes of Field Crops and Range	62
209	Control of Weeds and Other Hazards of Field Crops and Range	63
210	Control of Insects and External Parasites Affecting Livestock, Poultry and Other Animals	64
211	Control of Diseases of Livestock, Poultry and Other Animals	65
212	Control of Internal Parasites of Livestock, Poultry and Other Animals	66
213	Protect Livestock, Poultry and Other Animals from Toxic Chemicals, Poisonous Plants and Other Hazards	67
214	Protection of Plants, Animals and Man from Harmful Effects of Pollution	68
	GOAL III: PRODUCE AN ADEQUATE SUPPLY OF FARM AND FOREST PRODUCTS AT DECREASING REAL PRODUCTION COSTS	
301	Genetics and Breeding of Forest Trees	70
302	New and Improved Forest Engineering Systems	71
303	Economics of Timber Production	72
304	Improvement of Biological Efficiency of Fruit and Vegetable Crops	73
305	Mechanization of Fruit and Vegetable Crop Production	75
306	Production Management Systems for Fruits and Vegetables	76

TABLE A (Continued)

RPA	TITLE	Page
	GOAL III (Continued)	
307	Improvement of Biological Efficiency of Field Crops	77
308	Mechanization of Production of Field Crops	79
309	Production Management Systems for Field Crops	80
310	Reproductive Performance of Livestock, Poultry and Other Animals	81
311	Improvement of Biological Efficiency in Production of Livestock, Poultry and Other Animals	82
312	Environmental Stress in Production of Livestock, Poultry and Other Animals	83
313	Production Management Systems for Livestock, Poultry and Other Animals	84
314	Bees and Other Pollinating Insects	85
315	Improvement of Structures, Facilities and General Purpose Farm Supplies and Equipment	86
316	Farm Business Management	87
317	Mechanization and Structures Used in Production of Livestock, Poultry and Other Animals	88
318	Non-Commodity-Oriented Biological Technology and Biometry	89
	GOAL IV: EXPAND THE DEMAND FOR FARM AND FOREST PRODUCTS BY DEVELOPING NEW AND IMPROVED PRODUCTS AND PROCESSES AND ENHANCING PRODUCT QUALITY	
401	New and Improved Forest Products	91
402	Production of Fruit and Vegetable Crops with Improved Acceptability	93
403	New and Improved Fruit and Vegetable Products and Byproducts	94
404	Quality Maintenance in Storing and Marketing Fruits and Vegetables	95
405	Production of Field Crops with Improved Acceptability	96
406	New and Improved Food Products from Field Crops	97
407	New and Improved Feed, Textile and Industrial Products from Field Crops	98
408	Quality Maintenance in Storing and Marketing Field Crops	99
409	Production of Animal Products with Improved Acceptability	101
410	New and Improved Meat, Milk, Eggs and Other Animal Food Products	102
411	New and Improved Non-Food Animal Products	103
412	Quality Maintenance in Marketing Animal Products	104
	GOAL V: IMPROVE EFFICIENCY IN THE MARKETING SYSTEM	
501	Improvement of Grades and Standards--Crop and Animal Products	106
502	Development of Markets and Efficient Marketing of Timber and Related Products	107
503	Efficiency in Marketing Agricultural Products and Production Inputs	108
506	Supply, Demand and Price Analysis--Crop and Animal Products	109
507	Competitive Interrelationships in Agriculture	110
508	Development of Domestic Markets for Farm Products	111
509	Performance of Marketing Systems	112
510	Group Action and Market Power	113
511	Improvement in Agricultural Statistics	114

TABLE A (Continued)

RPA	TITLE	Page
	GOAL V (Continued)	
512	Improvement of Grades and Standards of Forest Products	115
513	Supply, Demand and Price Analysis--Forest Products	116
	GOAL VI: EXPAND EXPORT MARKETS AND ASSIST DEVELOPING NATIONS	
601	Foreign Market Development	118
602	Evaluation of Foreign Food Aid Programs	119
603	Technical Assistance to Developing Countries	120
604	Product Development and Marketing for Foreign Markets	121
	GOAL VII: PROTECT CONSUMER HEALTH AND IMPROVE NUTRITION AND WELL-BEING OF THE AMERICAN PEOPLE	
701	Insure Food Products Free of Toxic Contaminants Including Residues from Agricultural and Other Sources	123
702	Protect Food and Feed Supplies from Harmful Microorganisms and Naturally Occurring Toxins	124
703	Food Choices, Habits and Consumption	125
704	Home and Commercial Food Service	126
705	Selection and Care of Clothing and Household Textiles	127
706	Control of Insect Pests of Man and His Belongings	128
707	Prevent Transmission of Animal Diseases and Parasites to Man	129
708	Human Nutrition	130
709	Reduction of Hazards to Health and Safety	131
	GOAL VIII: ASSIST RURAL AMERICANS TO IMPROVE THEIR LEVEL OF LIVING	
801	Housing	134
802	Individual and Family Decision Making and Resource Use and Family Functioning	136
803	Causes of Poverty Among Rural People	137
804	Improvement of Economic Potential of Rural People	138
805	Communication and Education Processes	139
806	Individual and Family Adjustment to Change	140
807	Structural Changes in Agriculture	141
808	Government Programs to Balance Farm Output and Market Demand	142
	GOAL IX: PROMOTE COMMUNITY IMPROVEMENT INCLUDING DEVELOPMENT OF BEAUTY, RECREATION, ENVIRONMENT, ECONOMIC OPPORTUNITY, AND PUBLIC SERVICES	
901	Alleviation of Soil, Water and Air Pollution and Disposal of Wastes	144
902	Outdoor Recreation	146
903	Multiple Use Potential of Forest Land and Evaluation of Forestry Programs	147
904	Fish and Other Aquatic Life, Fur-Bearing Animals and Other Wildlife	148
905	Trees to Enhance Rural and Urban Environment	150
906	Culture and Protection of Ornamentals and Turf	151
907	Improved Income Opportunities in Rural Communities	152
908	Improvement of Rural Community Institutions and Services	153

ACTIVITY

Conservation, development and use of soil, water and other natural resources

4100 Resource description and inventory
4300 Resource development, conservation and management
4400 Evaluation of alternative uses and methods of use

Protection of man, commodities, resources and their products from losses, damage or discomfort

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4700 Protection against weeds and their control agents
4810 Protection against fire
4820 Protection against flood
4830 Protection against pollutants
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
4850 Protection against birds
4860 Protection against rodents and other mammals
4870 Protection against molds, fungi and other spoilage organisms
4880 Protection against allergens, toxins and poisonous plants
4890 Protection against radiation, noise and other hazards

Efficient production and quality improvement

4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
5100 Increasing consumer acceptability of farm and forest products
5200 Mechanization, improvement of physical efficiency and development of structures and facilities
5300 Management of labor, capital and other inputs

Food product development and processing*

5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food

5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage

Non-food product development and processing

5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes

*Includes new series for previously unexpanded Activities:

5410-5430 replaces 5400
5510-5550 replaces 5500

TABLE B (Continued)

Efficient marketing, including pricing and quality

5800 Identification, measurement and maintenance of quality
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6000 Analysis of supply, demand and price, including interregional competition
6100 Developing domestic markets, including consumer preference and behavior
6200 Foreign trade, market development and competition

Improvement of human nutrition and consumer satisfaction*

6310 Nutrient composition of food
6320 Human nutrient requirements
6330 Food fortification, enrichment and improvement
6340 Food consumption patterns and use
6360 Metabolism and function of nutrients in food
6370 Human nutrition and behavior
6380 Human nutritional monitoring and surveillance
6390 Eating quality of food

Improvement of family life, housing, and management and use of personal, domestic and other resources*

6410 Quality of family living
6420 Quality of housing
6430 Improvement of domestic and community water and waste systems
6450 Quality of management and use of personal, domestic and other resources

Development of human resources and economies of communities, areas and nations*

6500 Description, inventory and trends
6600 Economic development and adjustment

6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change

General methodology, technology and evaluation

7000 Design of experiments and methods of statistical analysis
7100 Improvement of research administration
7200 Information documentation and retrieval
7300 Evaluation of public programs, policies and services
7400 Improvement of agricultural statistics
7500 Development of research equipment and technology

*Includes new series for previously unexpanded Activities:

6310-6390 replaces 6300
6410-6450 replaces 6400
6710-6740 replaces 6700

COMMODITY, RESOURCE, OR TECHNOLOGY NOT ASSOCIATED WITH SPECIFIC COMMODITIES

COMMODITIES AND THEIR PRODUCTS AND NATURAL RESOURCES

PRIME* CLASSIF.	SUB-** CLASSIF.	
0100		Soil and Land
0200		Water
0300		Watersheds and River Basins
	0310	River Basins
	0320	Watersheds
	0399	Watersheds and River Basins, General
0400		Air and Climate
0500		Recreational Resources
	0510	Wilderness (Roadless Areas)
	0520	Campgrounds and Picnic Areas
	0530	Parks and Urban Greenspace
	0590	Other Recreational Resources
	0599	Recreational Resources, General
0600		Trees, Forests, and Forest Products (Excluding Edible Tree Nut Crops 1050, and Tung 2560)
	0610	Conifers, General
	0611	Christmas Trees
	0612	Douglas Fir
	0613	Other Western Conifers
	0614	Naval Stores
	0615	Ornamental and Shade Conifers
	0616	Southern Pine
	0617	Other Eastern Conifers
	0619	Other Conifers
	0620	Hardwoods, General
	0621	Black Walnut
	0622	Other Fine Hardwoods (Ash, Black Cherry, Yellow Birch, Select White and Red Oaks)
	0623	Poplars, Aspen and Cottonwoods
	0624	Elms (Ornamental and Shade only)
	0625	Other Ornamental and Shade Hardwoods
	0626	Maple (For Syrup and Sugar only)
	0629	Other Hardwoods
	0630	Both Conifers and Hardwoods, General
	0631	Shelterbelts and Windbreaks
	0632	Medicinal (See 2820 for Agricultural Drug and Chemurgic Crops)
	0633	Decorative Forest Greens
	0639	Other Conifers and Hardwoods
	0699	Trees, Forests, and Forest Products, General

* Primary Classification (Prime Commodity)
** Subclassification (Subcommodity)

TABLE C (Continued)

PRIME	SUB	
0700		Range
0800		Fish, Shellfish, Game and Fur-Bearing Animals and Other Wildlife and their Habitats
	0810	Game Fish Includes: Bass, Bluegill, Muskellunge, Pike, Shad, Trout
	0820	Commercial Fish and Shellfish, General Includes: Fish Farming
	0821	Freshwater Fish and Shellfish Includes: Catfish, Carp
	0822	Saltwater Fish and Shellfish Includes: Clams, Cod, Cusk, Flounder, Haddock, Hake, Herring, Lobster, Menhaden, Oysters, Shrimp, Whiting
	0830	Game Birds Includes: Wild Ducks, Wild Geese, Grouse, Partridges, Pheasants, Quail, Wild Turkeys
	0840	Non-Game Birds
	0850	Game Animals Includes: Antelopes, Bison, Bobcats, Deer, Elk, Moose
	0860	Fur-Bearing Animals Includes: Beavers, Foxes, Martens, Minks, Muskrats, Nutria, Rabbits
	0870	Fish Habitats
	0880	Wildlife Habitats
	0890	Other Wildlife
	0899	Fish, Shellfish, Game and Fur-Bearing Animals, etc., General
0900		Citrus and Subtropical Fruit
	0910	Citrus Includes: Grapefruit, Kumquats, Lemons, Limes, Mandarin Oranges, Oranges
	0920	Subtropical Fruit Includes: Avocadoes, Bananas, Coconuts, Dates. Figs, Guavas, Mangos, Olives, Papayas, Passion Fruits, Pineapples, Soursops
	0999	Citrus and Subtropical Fruit, General
1000		Deciduous and Small Fruits and Edible Tree Nuts
	1010	Deciduous Tree Fruits Includes: Apples, Apricots, Cherries, Nectarines, Peaches, Pears, Plums, Prunes
	1030	Berries and Cane Fruits Includes: Blackberries, Blueberries, Boysenberries, Cranberries, Currants, Elderberries, Raspberries, Strawberries
	1040	Grapes Includes: Grape Wines, Raisins
	1050	Edible Tree nuts Includes: Almonds, Chestnuts, Walnuts, Cashews, Filberts, Macadamia Nuts, Pecans
	1090	Other Deciduous and Small Fruits
	1099	Deciduous and Small Fruits, General

TABLE C (Continued)

PRIME	SUB	
1100		Potatoes
1200		Vegetables
	1210	Leguminous Vegetables, General
	1211	Beans (Dry)
	1212	Beans (Fresh, Fresh-Processed)
	1213	Peas (Dry)
	1214	Peas (Fresh, Fresh-Processed)
	1215	Lentils
	1219	Other Leguminous Vegetables
	1220	Melons and Other Cucurbits Includes: Cantaloupes, Muskmelons, Pumpkins, Squash, Watermelons, Cucumbers, Gourds
	1230	Greens and Leafy Vegetables Includes: Endive, Lettuce, Spinach, Turnip-Greens, Celery, Rhubarb, Parsley, Asparagus
	1240	Cabbage and Other Cole Crops Includes: Cabbage, Kale, Broccoli, Brussel Sprouts, Cauliflower, Kohlrabi
	1250	Rhizomes, Tubers, Bulbs, and Root Crops, General (For Potatoes see 1100)
	1251	Sweet Potatoes and Yams
	1252	Onions, Garlic, Leeks, Shallots
	1253	Carrots
	1259	Other (Rhizomes, Tubers, Bulbs, and Root Crops) Vegetables Includes: Beets, Radishes, Turnips, Cassava
	1260	Tomatoes and Related Crops, General
	1261	Tomatoes
	1262	Peppers
	1263	Eggplant
	1264	Other (Tomatoes and Related Crops) Vegetables
	1270	Mushrooms and Other Edible Fungi
	1280	Sweetcorn
	1291	Herbs and Spices Includes: Dill, Mustard, Basil, Ginger
	1298	Vegetables, General
	1299	Other Miscellaneous Vegetables Includes: Okra, Bamboo Shoots
1300		Ornamentals and Turf
	1310	Woody Shrubs and Ornamentals Includes: Azalea, Camellia, Forsythia, Hibiscus, Holly, Hydrangea, Laurel, Lilac, Magnolia, Privet, Rhododendron, Spiraea
	1320	Herbaceous Ornamentals Includes: Flowers, Foliage Plants, Bulb Crops, Bedding Plants
	1330	Lawns and Turf Includes: Bentgrass, Bermudagrass, Bluegrass, Dichondra, Fescue, Ryegrass, Zoysia, Ground Covers
	1391	Arboreta and Botanical Gardens
	1399	Other Ornamentals Includes: Cacti

TABLE C (Continued)

PRIME	SUB	
1400		Corn (For Sweetcorn see 1280) Includes: Popcorn
1500		Grain Sorghum
1600		Rice
1700		Wheat
	1710	Hard Red Winter Wheat
	1720	Hard Red Spring Wheat
	1730	Soft Red Winter Wheat
	1740	White Wheat Includes: Club, Western and Soft White
	1750	Durum Wheat
	1790	Other Wheat
	1799	Wheat, General
1800		Other Small Grains
	1810	Barley
	1820	Oats
	1830	Rye
	1890	Other Small Grains Includes: Buckwheat, Millet, Triticale
	1899	Other Small Grains, General
1900		Pasture
2000		Forage Crops
	2010	Perennial Grasses Includes: Bluegrass, Bromegrass, Dallisgrass, Fescue, Orchardgrass, Perennial Ryegrass, Timothy, Wheatgrass
	2020	Annual Grasses Includes: Annual Ryegrass, Millets, Forage Sorghums, Sudangrass, Sorghum-Sudangrass Hybrids
	2030	Legumes, General
	2031	Alfalfa
	2032	Trefoil
	2033	Red Clover
	2034	Crownvetch
	2039	Other Legumes Includes: Crimson Clover, Ladino Clover, Sweet Clover, Lespedeza
	2090	Other Forage Crops Includes: Cereal Crops used for Forage
	2099	Forage Crops, General
2100		Cotton (Including Cottonseed for Planting Purposes)
	2110	Upland (*G. hirsutum*)
	2120	Long Fiber (*G. barbadense*)
	2190	Other Cotton
	2199	Cotton, General

TABLE C (Continued)

PRIME	SUB	
2200		Cottonseed (For Meal, Oil, etc.)
2300		Soybeans
2400		Peanuts
2500		Other Oilseed and Oil Crops (Excluding Cottonseed)
	2510	Castorbeans
	2520	Crambe
	2530	Flaxseed
	2540	Safflower
	2550	Sunflower
	2560	Tung
	2590	Other Oilseed and Oil Crops Includes: Sesame, Rape, Lesquerella, etc.
	2599	Other Oilseed and Oil Crops, General
2600		Tobacco
	2610	Flue-Cured
	2620	Burley
	2630	Cigar Types
	2690	Other Tobacco
	2699	Tobacco, General
2700		Sugar Crops
	2710	Sugar Beets
	2720	Sugar Cane
	2730	Sugar Sorghum
	2790	Other Sugar Crops
	2799	Sugar Crops, General
2800		Miscellaneous and New Crops
	2810	Fiber Plants Includes: Abaca, Agave, Hemp, Ramie, Roselle, Kenaf, Sansevieria
	2820	Drug and Chemurgic Crops Includes: Dioscorea, Saponaria, Senna, Tephrosia
	2830	Flavoring and Beverage Plants Includes: Coffee, Hops, Mint, Tea, Vanilla
	2890	Other Miscellaneous and New Crops
	2899	Miscellaneous and New Crops, General
2900		Poultry
	2910	Egg Type Chickens
	2920	Eggs
	2930	Meat Type Chickens
	2940	Ducks and Geese
	2950	Turkeys
	2990	Other Poultry
	2999	Poultry, General

TABLE C (Continued)

PRIME	SUB	
3000		Beef Cattle
3100		Dairy Cattle
	3110	Butter
	3120	Cheese
	3130	Meat
	3140	Milk
	3150	Ice Cream
	3190	Other Dairy Cattle Products
	3199	Dairy Cattle, General
3200		Swine
3300		Sheep and Wool
3400		Other Animals (See 0850 for Fur-Bearing Animals)
	3410	Horses, Ponies and Mules
	3420	Goats and Mohair
	3430	Pets Includes: Dogs, Cats
	3440	Laboratory Animals Includes: Guinea Pigs, Mice, Rats, Rabbits
	3490	Other Animals
	3499	Other Animals, General
3500		Bees and Honey and Other Pollinating Insects

MANMADE RESOURCES

3600		General Purpose Supplies Includes: Machinery, Equipment, Fertilizers, Feedstuffs, and Pesticides
3700		Clothing and Textiles
3800		Food (Not readily associated with specific Plant and Animal Products)
3900		Structures and Facilities
	3910	Houses (People), Furniture, Household Equipment and Non-Textile Furnishings
	3920	Other Farm Structures and Related Facilities
	3930	Non-Farm Structures and Related Facilities including those used in the Marketing, Storing, Processing and Distributing Functions, and for Recreation Uses
	3940	Domestic and Community Water Supply Facilities and Systems
	3950	Drainage and Irrigation Facilities and Systems
	3960	Sewage and Waste Disposal Facilities and Systems
	3990	Other Structures and Facilities (Such as Trails, Roads, Telephone, and Electricity)
	3999	Structures and Facilities, General

HUMAN RESOURCES, ORGANIZATIONS AND INSTITUTIONS

4000		People as Individual Workers, Consumers and Members of Society
4100		The Family and its Members
4200		The Farm as a Business Enterprise

TABLE C (Continued)

PRIME	SUB
4300	Communities, Areas and Regions, including Counties and States and their Institutions and Organizations
4400	Agricultural Economy of United States and Sectors thereof, including Interrelationships with the Total Economy
4500	Agricultural Economy of Foreign Countries and Sectors thereof, including Interrelationships with the Total Economy
4600	Farmer Cooperatives
4700	Marketing, Processing and Supply Firms other than Cooperatives
4800	Marketing Systems and Sectors thereof

TECHNOLOGY NOT ASSOCIATED WITH SPECIFIC COMMODITIES OR RESOURCES

6100	Weeds
6200	Seed Research
6300	Biological Cell Systems
6400	Experimental Design and Statistical Methods
6500	Invertebrates Includes: Insects, Mites, Ticks, Snails, Slugs, and Leeches
6600	Microorganisms, Viruses, etc.
6700	Plants
6800	Animals (Vertebrates)
6900	Research on Research Management (Not Research Management *per se*)
7000	Research Equipment and Technology (Such as Remote Sensing)

TABLE D

FIELD OF SCIENCE

Biological

0110 Biochemistry and biophysics - animal
0112 Biochemistry and biophysics - plant
0113 Biochemistry and biophysics - human
0114 Biochemistry and biophysics - other

0210 Biology - Environmental, systematic, applied - animal
0212 Biology - Environmental, systematic, applied - plant
0213 Biology - Environmental, systematic, applied - human
0214 Biology - Environmental, systematic, applied - other

0310 Biology - Molecular - animal
0312 Biology - Molecular - plant
0313 Biology - Molecular - other

0410 Entomology - animal
0412 Entomology - plant
0413 Entomology - human
0414 Entomology - other

0510 Animal Genetics and Breeding
0512 Plant Genetics and Breeding
0513 Genetics - other

0610 Immunology - animal
0612 Immunology - plant
0613 Immunology - human

0710 Microbiology - animal
0712 Microbiology - plant
0713 Microbiology - human
0714 Microbiology - soils
0790 Microbiology - other

0810 Nematology - animal
0812 Nematology - plant
0813 Nematology - other

0910 Nutrition and Metabolism - animal
0912 Nutrition and Metabolism - plant
0913 Nutrition and Metabolism - human
0914 Nutrition and Metabolism - other

1010 Parasitology - animal
1012 Parasitology - plant
1013 Parasitology - other

1110 Pathology - animal
1112 Pathology - plant
1113 Pathology - human
1114 Pathology - other

1210 Pharmacology

1310 Physiology - animal
1312 Physiology - plant
1313 Physiology - other

1410 Virology - animal
1412 Virology - plant
1413 Virology - human
1414 Virology - other

Physical

1524 Chemistry - analytical
1525 Chemistry - inorganic
1526 Chemistry - organic
1527 Chemistry - physical
1528 Chemistry - soils
1529 Chemistry - other

1920 Engineering - agricultural
1924 Engineering - mechanical
1925 Engineering - electrical
1926 Engineering - civil
1927 Engineering - chemical
1928 Engineering - industrial
1929 Engineering - other

2020 Geology and geography

2120 Hydrology

2220 Mathematics
2230 Statistics and biometry

2320 Meteorology and climatology

2420 Physics
2421 Physics - soils

Social and Behavioral

2530 Anthropology
2630 Economics

2730 Education
2740 Information and Communication

2830 History
2930 Law
3030 Political Science
3130 Psychology
3230 Sociology
3310 Art and Architecture

SPECIAL CATEGORIES

Code	Research
XPR	Pollution Related - Having relationship to cause, prevention, and/or control of pollution of air, water, and/or soil. As defined; "Enviromental pollution is the unfavorable alteration of our surroundings wholly or largely as a by-product of man's actions, through direct and indirect effects of changes in energy patterns, radiation, chemical and physical constitutions, and abundances of organisms. The changes may affect man directly, his supplies of water and of agricultural and biological products, his physical objects or possessions, his opportunities for recreation and the appreciation of nature." (From Introduction in "Restoring the Quality of our Environment." Report Environmental Pollution Panel, President's Science Advisory Committee.)
XHMR	Health and Medical Related - Having relationship to cause, prevention and control of human disease or disorders; to nutrition and population problems that affect optimum health; and to improve methods of research applicable to the subjects.
XTHR	Tobacco-Health Related - Having a relationship to the possible effects of use of tobacco upon human health.
XWR	Weather-Related - Having a relationship to the interactions of plants, animals, man or other organisms with macro- or micro-climatological or meteorological factors; amelioration of hazards of or damage by lightning and other meteorological factors; weather modification; and related subjects.
XNRR	Nuclear Radiation Related - Having a relationship to uses and/or effects of radioactive isotopes, purposeful irradiation of organisms and products, other exposures to radioactivity; "fallout" and other radioactive contaminants.
XPAR	Poverty Area Related - Having definite relationship to or direct applicability within one or more of those geographic areas designated as "Redevelopment Areas" or "Economic Development Districts" in accord with Public Law 89-136. Six such Districts are specified: New England, Appalachia, Upper Great Lakes, Coastal Plains, Ozarks, and Four Corners.
XNBR	Natural Beauty Related - Concerning or having a relationship to those government programs and/or policies designed to conserve and enhance the esthetic values of geographic sites and areas. Includes consideration of such areas as farm homesteads, roads and highways, forests, spoil areas, recreation areas, wildlife cover and refuge, windbreaks,and shelterbelts and open spaces; and the protection of terrain, soils, waters and vegetation associated herewith.

PESTICIDE TARGETS

Code	Pesticide Activity
PST1	Target I, Fundamental Biology - Studies of the taxonomy, biology, ecology, physiology, pathology, metabolism and nutrition of pests and host plants and animals.
PST2	Target II, Improve Means of Nonpesticidal Control - Control of pests by non-pesticidal means is the ultimate goal - through pest-resistance; attractants, and repellants; predators, parasites and pathogens of pests; and physical control practices.
PST3	Target III, Improve Pesticide Use Patterns - Development of (a) safer, more effective ways to use pesticides by timing, formulations, and modes of application; (b) improved detection and measurement of pesticides and metabolites; and (c) ways to eliminate or minimize residues.
PST4	Target IV, Toxicology, Pathology, Metabolism, and Fate of Pesticides - Applied or fed to laboratory and farm animals, or applied to plants. Determination of residues in organisms, modes of metabolic breakdown and metabolic products.
PST5	Target V, Economics of Pest Control - and use, supply, demands and requirements for pesticides.

WATER RESOURCES CODES

CRIS CODE NUMBERS FOR COWRR CATEGORIES AND SUBCATEGORIES

CRIS CODE	COWRR NO.	COWRR CATEGORIZATION (Abbreviated)	CRIS CODE	COWRR NO.	COWRR CATEGORIZATION (Abbreviated)
	I	Nature of water		V	Water qual. mgmt. protect.
W1A	I A	Properties of water	W5A	V A	Pollutant identification
W1B	I B	Solution & suspension	W5B	V B	Pollutant source & fate
	II	Water cycle	W5C	V C	Pollutant effects
W2A	II A	Water cycle-general	W5D	V D	Waste treatment process.
W2B	II B	Precipitation	W5E	V E	Disposal of wastes
W2C	II C	Snow, ice, frost	W5F	V F	Water treatment
W2D	II D	Evaporation, transp.	W5G	V G	Water quality control
W2E	II E	Stream flow		VI	Water resources planning
W2F	II F	Groundwater	W6A	VI A	Techniques of planning
W2G	II G	Water in soils	W6B	VI B	Evaluation process
W2H	II H	Lakes	W6C	VI C	Costs, pricing, repay.
W2I	II I	Water and plants	W6D	VI D	Water demand
W2J	II J	Erosion & sedimentation	W6E	VI E	Water law/institutions
W2K	II K	Chemical processes	W6F	VI F	Nonstructural alternat.
W2L	II L	Estuarine problems	W6G	VI G	Ecologic impact wat. dev.
	III	Water supply aug.-cons.		VII	Resources data
W3A	III A	Saline water conversion	W7A	VII A	Network design
W3B	III B	Water yield improvement	W7B	VII B	Data acquisition
W3C	III C	Use water impaired quality	W7C	VII C	Eval. proc. publication
W3D	III D	Conserv.-domestic use		VIII	Engineering works
W3E	III E	Conserv.-industry use	W8A	VIII A	Engineering design
W3F	III F	Conserv.-Agricultural	W8B	VIII B	Materials
	IV	Water quan. mgmt. cont.	W8C	VIII C	Construction operation
W4A	IV A	Control water on land		IX	Manpower, grants, facil.
W4B	IV B	Groundwater mgmt.	W9A	IX A	Educ.-extramural
W4C	IV C	Mans act. on water	W9B	IX B	Educ.-inhouse
W4D	IV D	Watershed protection	W9C	IX C	Research facilities
			W9D	IX D	Grants & Cont. Allots.

TABLE H

AGRICULTURAL ENERGY RESEARCH AND DEVELOPMENT

CODE	ENERGY RELATED
	I. Conservation and Use of Energy
	A. Crops
E1A1	1. Production
E1A2	2. Processing
E1A3	3. Marketing
E1A4	4. Consumption
	B. Livestock
E1B1	1. Production
E1B2	2. Processing
E1B3	3. Marketing
E1B4	4. Consumption
	C. Forestry
E1C1	1. Production
E1C2	2. Processing
E1C3	3. Marketing
E1C4	4. Consumption
	D. Sectoral and Multi-Commodity
E1D1	1. Production
E1D2	2. Processing
E1D3	3. Marketing
E1D4	4. Consumption
E1E1	E. Housing, Equipment, and Furnishings
E1F1	F. Rural Transportation
E1G1	G. Rural Development
	II. Substitution by Renewable or Non-Critical Energy Sources and Forms
	A. Development of Energy and Petrochemical Substitutes from Biomass
E2A1	1. Agricultural Products and Residues
E2A2	2. Forestry Products and Residues
E2A3	3. Energy Farming Crops, Forests and Micoorganisms
	B. Development of Technology (including equipment) for Use of Alternative Sources and Forms of Energy
E2B1	1. Solar, Wind
E2B2	2. Geothermal
E2B3	3. Coal, Lignite, Oil Shale, Peat, Etc.
E2B4	4. Electricity
E2B5	5. Waste Heat from Power Plants, etc.
	III. Consequences of Energy, Production, Availability and Use
E3A1	A. Agriculture and Forestry
E3B1	B. Other Socio-Economic
E3C1	C. Natural Resources
E3D1	D. Reclamation and Environmental Effects

INTEGRATED PEST MANAGEMENT (IPM) RESEARCH

CODE	IPM RESEARCH PROGRAM ELEMENT
IPMB	BASIC RESEARCH - Generates the knowledge required to understand pests and to develop national control strategies for individual pests and pest complexes. Examples are research on life cycles, population dynamics, biochemical nature of resistance, mode-of-action of pesticides, epidemiology, and ecology.
IPMC	CONTROL COMPONENTS RESEARCH - Develops specific control techniques and related technologies, such as pest-resistant crop cultivars and livestock breeds; and biological-, chemical-, cultural-, and mechanical-control methods.
IPM1	IPM SYSTEMS RESEARCH LEVEL I - Consists of research to integrate two or more control techniques to manage one or more species of the same single grouping of pests, such as weeds (e.g., pigweed, crabgrass, ragweed), insects, nematodes, or diseases. Such programs are referred to as integrated weed-management systems, integrated insect-management systems, integrated nematode-management systems, and integrated disease-management systems.
IPM2	IPM SYSTEMS RESEARCH LEVEL II - Consists of research to integrate two or more management systems for two or more pest groupings, such as diseases and insects; or diseases, weeds, insects, and nematodes.
IPME	ECONOMICS RESEARCH - Evaluates the economic advantages, disadvantages, and implementation feasibility of emerging IPM methods, systems, and strategies relative to established practices.

INDEX OF RPA'S BY ACTIVITY

ACTIVITY CODE	RESEARCH PROBLEM AREA (RPA)
4001	ADMINISTRATIVE PROJECT
001	ADMINISTRATION
4100	RESOURCE DESCRIPTION
101	APPRAIS OF SOIL RESOR
104	ALTERN USE OF LAND
105	CONSERV USE OF WATER
108	ECON LEG PROB OF WAT
109	WEATHER ADAPT & MOD
110	APPRAIS FORST & RANGS
113	REMOTE SENSING
603	TECH AID DEV CRTY
902	OUTDOOR RECREATION
904	WLDLFE AND FISH ECOL
4300	RESOURCE DEV & CONSE
102	SOIL PLNT WTR NUTRI
103	MGMT OF SALINE SOILS
105	CONSERV USE OF WATER
106	DRAIN AND IRRIGATION
107	WATERSHED PROT & MGMT
108	ECON LEG PROB OF WAT
109	WEATHER ADAPT & MOD
111	RIOL CULT MGMT FORSTS
112	IMPROV RANGE RESOR
113	REMOTE SENSING
603	TECH AID DEV CRTY
901	ALLEV POLLUTION
902	OUTDOOR RECREATION
903	MULTI-USE-FOREST POTEN
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
4400	EVAL OF ALTERNAT USE
104	ALTERN USE OF LAND
108	ECON LEG PROB OF WAT
603	TECH AID DEV CRTY
901	ALLEV POLLUTION
903	MULTI-USE-FOREST POTEN
904	WLDLFE AND FISH ECOL
4500	INSECTS CONTROL
109	WEATHER ADAPT & MOD
201	CNTRL FORST INSECTS
204	CNTR PESTS FRT & VEGS
207	CNTR PESTS FLD CROPS
210	CONTR PESTS ANIMALS
213	PROT ANMLS FROM TOXINS
301	GENET BREED FORST TRE
314	BEES OTH POLLNTNG INS
318	NON-COM BIO TECH/RIMET
401	NEW IMP FOREST PROD
404	MKT QUAL FRTS & VEGS
408	MKT QUAL FIELD CROPS
412	MKT QUAL ANIMAL PROD
603	TECH AID DEV CRTY
701	TOX RES IN FOOD
704	HOME COMM FOOD SERV
706	CONTR INSECTS AFF MAN
801	RURAL HOUSING
902	OUTDOOR RECREATION
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4600	DISEASE PARASITE NEM
202	CONTROL FOREST DIS
205	CNTR DISE FRT & VEG
208	CNTR DIS FIELD CROPS
211	CONTR DIS ANIMALS
212	CNTR INTER PARASITES
213	PROT ANMLS FROM TOXINS
301	GENET BREED FORST TRE
314	BEES OTH POLLNTNG INS
318	NON-COM BIO TECH/RIMET
404	MKT QUAL FRTS & VEGS
408	MKT QUAL FIELD CROPS
412	MKT QUAL ANIMAL PROD
603	TECH AID DEV CRTY
701	TOX RES IN FOOD
704	HOME COMM FOOD SERV
707	TRANS ANIML MAN DIS
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4700	WEED CONTROL
105	CONSERV USE OF WATER
111	RIOL CULT MGMT FORSTS
206	CNTR WEEDS FRT & VEG
209	CNTR WEEDS FLD CROPS
213	PROT ANMLS FROM TOXINS
318	NON-COM BIO TECH/RIMET
603	TECH AID DEV CRTY
701	TOX RES IN FOOD
902	OUTDOOR RECREATION
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4810	FIRE
102	SOIL PLNT WTR NUTRI
203	FOREST FIRE PROTECT
314	BEES OTH POLLNTNG LNS
603	TECH AID DEV CRTY
709	REDUCE HAZ HLTH & SFTY
801	RURAL HOUSING
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4820	FLOOD
102	SOIL PLNT WTR NUTRI
107	WATERSHED PROT & MGMT
109	WEATHER ADAPT & MOD
111	RIOL CULT MGMT FORSTS
314	BEES OTH POLLNTNG INS
603	TECH AID DEV CRTY
801	RURAL HOUSING
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4830	POLLUTANTS
214	PROTECT FROM POLLUTION
314	BEES OTH POLLNTNG INS
603	TECH AID DEV CRTY
701	TOX RES IN FOOD
702	FOOD PROT FROM TOX
705	SEL CARE CLOTH & TEXTL
709	REDUCE HAZ HLTH & SFTY
801	RURAL HOUSING
901	ALLEV POLLUTION
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4840	CLIMATIC EXTREMES
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105	CONSERV USE OF WATER
107	WATERSHED PROT & MGMT
109	WEATHER ADAPT & MOD
206	CNTR WEEDS FRT & VEG
209	CNTR WEEDS FLD CROPS
312	ENV STRESS IN ANML PR
314	BEES OTH POLLNTNG INS
603	TECH AID DEV CRTY
709	REDUCE HAZ HLTH & SFTY
801	RURAL HOUSING
904	WLDLFE AND FISH ECOL
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906	ORNAMENT & TURF DEV
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206	CNTR WEEDS FRT & VEG
209	CNTR WEEDS FLD CROPS
314	BEES OTH POLLNTNG INS
603	TECH AID DEV CRTY
801	RURAL HOUSING
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4860	RODENTS OTHER MAMMALS
111	RIOL CULT MGMT FORSTS
206	CNTR WEEDS FRT & VEG
209	CNTR WEEDS FLD CROPS
213	PROT ANMLS FROM TOXINS
314	BEES OTH POLLNTNG INS
404	MKT QUAL FRTS & VEGS
408	MKT QUAL FIELD CROPS
412	MKT QUAL ANIMAL PROD
603	TECH AID DEV CRTY
801	RURAL HOUSING
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4870	MOLDS,FUNGI OTH SPOIL
314	BEES OTH POLLNTNG INS
401	NEW IMP FOREST PROD
404	MKT QUAL FRTS & VEGS
408	MKT QUAL FIELD CROPS
412	MKT QUAL ANIMAL PROD
603	TECH AID DEV CRTY
702	FOOD PROT FROM TOX
705	SEL CARE CLOTH & TEXTL
801	RURAL HOUSING
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4880	ALLERGINS,TOXINS
213	PROT ANMLS FROM TOXINS
314	BEES OTH POLLNTNG INS
603	TECH AID DEV CRTY
701	TOX RES IN FOOD
702	FOOD PROT FROM TOX
709	REDUCE HAZ HLTH & SFTY
901	ALLEV POLLUTION
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
4890	RADIATION,NOISE
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312	ENV STRESS IN ANML PR
314	BEES OTH POLLNTNG INS
404	MKT QUAL FRTS & VEGS
408	MKT QUAL FIELD CROPS
412	MKT QUAL ANIMAL PROD
603	TECH AID DEV CRTY
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904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
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109	WEATHER ADAPT & MOD
111	RIOL CULT MGMT FORSTS
112	IMPROV RANGE RESOR
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301	GENET BREED FORST TRE
304	IMP BIO EFF FRT & VEGS
307	IMP BIO EFF FLD CRP
310	ANIMAL REPRODUCTION
311	IMP BIO EFF ANML PR
312	ENV STRESS IN ANML PR
314	BEES OTH POLLNTNG INS
318	NON-COM BIC TECH/RIMET
402	PROD F & V IMP ACCEPT
405	PROD FLD CROP IMP ACPT
409	PROD ANML PR IMP ACCP
603	TECH AID DEV CRTY
706	CONTR INSECTS AFF MAN
707	TRANS ANIML MAN DIS
904	WLDLFE AND FISH ECOL
905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
5000	BIOLOGICAL EFFICIRN
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103	MGMT OF SALINE SOILS
111	RIOL CULT MGMT FORSTS
112	IMPROV RANGE RESOR
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301	GENET BREED FORST TRE
304	IMP BIO EFF FRT & VEGS
307	IMP BIO EFF FLD CRP
309	PROD MGMT SYS FLD CRP
310	ANIMAL REPRODUCTION
311	IMP BIO EFF ANML PR
312	ENV STRESS IN ANML PR
314	BEES OTH POLLNTNG INS
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301	GENET BREED FORST TRE
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402	PROD F & V IMP ACCEPT
405	PROD FLD CROP IMP ACPT
409	PROD ANML PR IMP ACCP
603	TECH AID DEV CRTY
705	SEL CARE CLOTH & TEXTL
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905	TREES BEAUTIFICATION
906	ORNAMENT & TURF DEV
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906	ORNAMENT & TURF DEV
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309	PROD MGMT SYS FLD CRP
313	PROD MGMT SYS ANML PR
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316	FARM BUSINESS MGMT
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	318 NON-CCM BIO TECH/EIMET
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD PLD CROP
	408 MKT QUAL FIELD CROPS
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG PRGN
	904 WLDLFE AND FISH ECOL
5420	BIOCHEM CHEM IN FOOD
	314 BEES CTH POLLNTNG INS
	318 NON-CCM BIO TECH/EIMET
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD FLD CROP
	408 MKT QUAL FIELD CROPS
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG PRGN
	904 WLDLFE AND FISH ECOL
5430	SENSORY PROP FOODS
	314 BEES CTH POLLNTNG INS
	318 NON-CCM BIO TECH/EIMET
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD FLD CROP
	408 MKT QUAL FIELD CROPS
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG PRGN
	904 WLDLFE AND FISH ECOL
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	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD FLD CROP
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG FRGN
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	314 BEES OTH POLLNTNG INS
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD FLD CROP
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG FRGN
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	904 WLDLFE AND FISH ECOL
5530	CHEMICAL PROCESSES
	314 BEES CTH POLLNTNG INS
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD FLD CROP
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG FRGN
	708 HUMAN NUTRITION
	904 WLDLFE AND FISH ECOL
5540	PROCESSING EFFICIENS
	314 BEES CTH POLLNTNG INS
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD FLD CROP
	408 MKT QUAL FIELD CROPS
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG PRGN
	709 HUMAN NUTRITION
	904 WLDLFE AND FISH ECOL
5600	NON FOODS CHEM PHYSI
	314 BEES OTH POLLNTNG INS
	315 IMP STRDC FARM SUPP
	318 NON-COM BIO TECH/EIMET
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	405 PROD FLD CROP IMP ACPT
	407 NEW IMP NON-FOOD PC
	408 MKT QUAL FIELD CROPS
	409 PROD ANML PR IMP ACCP
	411 IMP NON-FOOD ANML PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	705 SEL CARE CLOTH & TEXTL
	904 WLDLFE AND FISH ECOL
	906 ORNAMENT & TURF DEV
5700	NON FOODS NEW IMPRVD
	314 BEES OTH POLLNTNG INS
	401 NEW IMP FOREST PROD
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	405 PROD FLD CROP IMP ACPT
	407 NEW IMP NON-FOOD PC
	409 PROD ANML PR IMP ACCP
	411 IMP NON-FOOD ANML PR
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG PRGN
	705 SEL CARE CLOTH & TEXTL
	906 ORNAMENT & TURF DEV
5800	MARKET QUALITY
	314 BEES OTH POLLNTNG INS
	402 PROD F & V IMP ACCEPT
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	405 PROD FLD CROP IMP ACPT
	406 NEW IMP FOOD FLD CROP
	407 NEW IMP NON-FOOD PC
	408 MKT QUAL FIELD CROPS
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	411 IMP NON-FOOD ANML PR
	412 MKT QUAL ANIMAL PROD
	501 IMP GRADES & STARDS
	502 MKTG TIMBER PRODDCTS
	512 IMP GRADES FRST PROD
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG FRGN
	704 HOME COMM FOOD SERV
	904 WLDLFE AND FISH ECOL
	905 TREES BEADTIFICATION
	906 ORNAMENT & TURF DEV
5900	MARKET EFFICIENCY
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	404 MKT QUAL FRTS & VEGS
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	412 MKT QUAL ANIMAL PROD
	502 MKTG TIMBER PRODUCTS
	503 MKTG EFF AGRI PRODS
	508 DOMESTIC MKT DEVELP
	509 PERFORMANCE MKTG SYS
	510 GROUP ACT MKT POWER
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	502 MKTG TIMBER PRODUCTS
	506 SPLY DEMAND AND PRIC
	507 COMP RBL IN AGRIC
	508 DOMESTIC MKT DEVELP
	513 PRICE ANAL FRST PROD
	603 TECH AID DEV CRTY
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	905 TREES BEAUTIFICATION
	906 ORNAMENT & TURF DEV
6100	DOMESTIC MARKETS
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	502 MKTG TIMBER PRODDCTS
	508 DOMESTIC MKT DEVELP
	603 TECH AID DEV CRTY
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	905 TREES BEAUTIFICATION
	906 ORNAMENT & TURF DEV
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	601 FGN MKT DEVELP
	603 TECH AID DEV CRTY
	604 PRD DVLPMT/MKTG FRGN
	904 WLDLFE AND FISH ECOL
	905 TREES BEAUTIFICATION
	906 ORNAMENT & TURF DEV
6300	FOOD NUTRITION
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	603 TECH AID DEV CRTY
	708 HUMAN NUTRITION
	904 WLDLFE AND FISH ECOL
6310	NUTRIENT COMPOSITION
	314 BEES OTH POLLNTNG INS
	401 NEW IMP FOREST PROD
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	406 NEW IMP FOOD FLD CROP
	408 MKT QUAL FIELD CROPS
	410 IMP MEAT MILK EGG PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEC
	904 WLDLFE AND FISH ECOL
6320	HUMAN NUTRIENT REQUI
	314 BEES OTH POLLNTNG INS
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEC
	904 WLDLFE AND FISH ECOL
6330	FOOD FORTIFICATION
	314 BEES CTH POLLNTNG INS
	401 NEW IMP FOREST PROD
	403 NEW & IMP P&V PROD
	404 MKT QUAL FRTS & VEGS
	406 NEW IMP FOOD FLD CROP
	408 MKT QUAL FIELD CROPS
	410 IMP MEAT MILK EGG PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEC
	904 WLDLFE AND FISH ECOL
6340	FOOD CONSUMPTION
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	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEC
	904 WLDLFE AND FISH ECOL
6360	METABOLISM FUNCTION
	314 BEES CTH POLLNTNG INS
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEC
	904 WLDLFE AND FISH ECOL
6370	NUTRITION & BEHAVIOR
	314 BEES OTH POLLNTNG INS
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEC
	904 WLDLFE AND FISH ECOL
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	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEO
	904 WLDLFE AND FISH ECOL
6390	EATING QUALITY FOODS
	314 BEES OTH POLLNTNG INS
	401 NEW IMP FOREST PROD
	403 NEW & IMP FOR PROD
	404 MKT QUAL FRTS & VEGS
	406 NEW IMP FOOD FLD CROP
	408 MKT QUAL FIELD CROPS
	410 IMP MEAT MILK EGG PR
	412 MKT QUAL ANIMAL PROD
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	704 HOME COMM FOOD SERV
	708 HUMAN NUTRITION
	805 COMMUNICAT RURAL PEO
	904 WLDLFE AND FISH ECOL
6410	QUALITY FAMILY LIVIN
	603 TECH AID DEV CRTY
	705 SEL CARE CLOTH & TEXTL
	801 RURAL HOUSING
	802 INDIV & FAM DEC MAKING
	906 ORNAMENT & TURF DEV
6420	QUALITY OF HOUSING
	603 TECH AID DEV CRTY
	705 SEL CARE CLOTH & TEXTL
	801 RURAL HOUSING
	802 INDIV & FAM DEC MAKING
	906 ORNAMENT & TURF DEV
6430	IMP OF WATER & WASTE
	603 TECH AID DEV CRTY
	801 RURAL HOUSING
	802 INDIV & FAM DEC MAKING
	908 RURAL INSTITUT IMP
6450	QUALITY MGT & RESOUR
	603 TECH AID DEV CRTY
	705 SEL CARE CLOTH & TEXTL
	801 RURAL HOUSING
	802 INDIV & FAM DEC MAKING
	906 ORNAMENT & TURF DEV
6500	DSCPR HUMAN RESOUR
	303 ECON TIMBER PRODUCTN
	602 EVAL FGN FOOD AID PGM
	603 TECH AID DEV CRTY
	801 RURAL HOUSING
	803 RURAL POVERTY
	804 ECON POTENT RURL PEO
	806 ADJUSTMENT TO CHANGE
	807 AGRIC ECONOMIC CHANGE
	902 OUTDOOR RECREATION
	907 RURAL INCOME IMP
	908 RURAL INSTITUT IMP
6600	ECON DEV ADJUSTMENT
	603 TECH AID DEV CRTY
	803 RURAL POVERTY
	804 ECON POTENT RURL PEO
	806 ADJUSTMENT TO CHANGE
	807 AGRIC ECONOMIC CHANGE
	808 GOV'T PROGRAMS
	907 RURAL INCOME IMP
	908 RURAL INSTITUT IMP
6710	IMP SOCIAL WELLBEING
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	803 RURAL POVERTY
	804 ECON POTENT RURL PEO
	805 COMMUNICAT RURAL PEO
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	902 OUTDOOR RECREATION
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6720	IMP SOCIAL SERVICES
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	804 ECON POTENT RURL PEO
	805 COMMUNICAT RURAL PEO
	806 ADJUSTMENT TO CHANGE
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	908 RURAL INSTITUT IMP
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	805 COMMUNICAT RURAL PEO
	806 ADJUSTMENT TO CHANGE
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	907 RURAL INCOME IMP
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6740	ADJUSTMENT ECON CHG
	603 TECH AID DEV CRTY
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	802 INDIV & FAM DEC MAKING
	803 RURAL POVERTY
	804 ECON POTENT RURL PEO
	805 COMMUNICAT RURAL PEO
	806 ADJUSTMENT TO CHANGE
	902 OUTDOOR RECREATION
	907 RURAL INCOME IMP
	908 RURAL INSTITUT IMP
7000	EXPER STAT ANALYSIS
	318 NON-COM BIO TECH/BIMET
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	708 HUMAN NUTRITION
	907 RURAL INCOME IMP
7100	IMP RESEARCH ADMIN
	114 RSCH ON MGMT OF RSCH
	603 TECH AID DEV CRTY
7200	INFO DOCUMENT & RETRVL
	114 RSCH ON MGMT OF RSCH
	603 TECH AID DEV CRTY
	805 COMMUNICAT RURAL PEO
	807 AGRIC ECONOMIC CHANGE
	907 RURAL INCOME IMP
7300	EVAL PUBLIC PROGRAMS
	104 ALTERN USE OF LAND
	108 ECON LEG PROB OF WAT
	109 WEATHER ADAPT & MOD
	303 ECON TIMBER PRODUCTN
	316 FARM BUSINESS MGMT
	506 SPLY DEMAND AND PRIC
	507 COMP REL IN AGRIC
	509 PERFORMANCE MKTG SYS
	510 GROUP ACT MKT POWER
	601 FGN MKT DEVELP
	602 EVAL FGN FOOD AID PGM
	603 TECH AID DEV CRTY
	703 FOOD CONSUMP HABITS
	708 HUMAN NUTRITION
	803 RURAL POVERTY
	805 COMMUNICAT RURAL PEO
	807 AGRIC ECONOMIC CHANGE
	808 GOV'T PROGRAMS
	901 ALLEV POLLUTION
	902 OUTDOOR RECREATION
	903 MULTI-USE-FOREST POTEN
	904 WLDLFE AND FISH ECOL
	907 RURAL INCOME IMP
	908 RURAL INSTITUT IMP
7400	IMP AGRI STATISTICS
	506 SPLY DEMAND AND PRIC
	511 IMP AGRIC STATISTICS
	513 PRICE ANAL FRST PROD
	603 TECH AID DEV CRTY
7500	DVLPMT RSCH EQUIP
	109 WEATHER ADAPT & MOD
	110 APPRAIS FORST & RANGS
	111 BIOL CULT MGMT FORSTS
	113 REMOTE SENSING
	214 PROTECT FROM POLLUTION
	302 IMP FOREST ENG SYS
	304 IMP BIO EFF FRT & VEGS
	307 IMP BIO EFF FLD CRP
	311 IMP BIO EFF ANML PR
	318 NON-COM BIO TECH/BIMET
	402 PROD F & V IMP ACCEPT
	405 PROD FLD CROP IMP ACPT
	409 PROD ANML PR IMP ACCP
	410 IMP MEAT MILK EGG PR
	511 IMP AGRIC STATISTICS
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9900	UNCLASSIFIED
	990 UNCLASSIFIED

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- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
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- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 110 APPRAIS FORST & RANGS
- 113 REMOTE SENSING
- 503 MKTG EFF AGRI PRODS
- 603 TECH AID DEV CRTY
- 901 ALLEV POLLUTION

0200 WATER
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 104 ALTERN USE OF LAND
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 108 ECON IRG PROB OF WAT
- 109 WEATHER ADAPT & MOD
- 110 APPRAIS FORST & RANGS
- 113 REMOTE SENSING
- 603 TECH AID DEV CRTY
- 901 ALLEV POLLUTION

0300 WATERSHEDS RIVER BAS
- 102 SOIL PLNT WTR NUTRI
- 104 ALTERN USE OF LAND
- 105 CONSERV USE OF WATER
- 107 WATERSHED PROT & MGMT
- 106 ECON IRG PROB OF WAT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 302 IMP FOREST ENG SYS
- 603 TECH AID DEV CRTY
- 901 ALLEV POLLUTION
- 903 MULTI-USE-FOREST POTEN

0400 AIR AND CLIMATE
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 603 TECH AID DEV CRTY
- 901 ALLEV POLLUTION

0500 RECREATION RESOURCES
- 110 APPRAIS FORST & RANGS
- 113 REMOTE SENSING
- 214 PROTECT FROM POLLUTION
- 603 TECH AID DEV CRTY
- 902 OUTDOOR RECREATION
- 903 MULTI-USE-FOREST POTEN

0600 TIMBER FORST PRODUCT
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 110 APPRAIS FORST & RANGS
- 111 BIOL CULT MGMT FORSTS
- 113 REMOTE SENSING
- 201 CNTRL FORST INSECTS
- 202 CONTROL FOREST DIS
- 203 FOREST FIRE PROTECT
- 214 PROTECT FROM POLLUTION
- 301 GENET BREED FORST TRE
- 302 IMP FOREST ENG SYS
- 303 ECON TIMBER PRODUCTN
- 318 RON-CCM BIO TECH/TIMBT
- 401 NEW IMP FOREST PROD
- 502 MKTG TIMBER PRODUCTS
- 512 IMP GRADES FRST PROD
- 513 PRICE ANAL FRST PROD
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 801 RURAL HOUSING
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION
- 902 OUTDOOR RECREATION
- 903 MULTI-USE-FOREST POTEN
- 904 WILDLFE AND FISH ECOL
- 905 TREES BEAUTIFICATION

0700 RANGE
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 110 APPRAIS FORST & RANGS
- 112 IMPROV RANGE RESOR
- 113 REMOTE SENSING
- 203 FOREST FIRE PROTECT
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 603 TECH AID DEV CRTY
- 808 GOV'T PROGRAMS
- 903 MULTI-USE-FOREST POTEN
- 904 WLDLFE AND FISH ECOL
- 905 TREES BEAUTIFICATION

0800 WILDLIFE AND FISH
- 110 APPPRAIS FORST & RANGS
- 113 REMOTE SENSING
- 203 FOREST FIRE PROTECT
- 214 PROTECT FROM POLLUTION
- 409 PROD ANML PR IMP ACCP
- 410 IMP MEAT MILK EGG PR
- 411 IMP NON-FOOD ANML PP
- 412 MKT QUAL ANIMAL PROD
- 501 IMP GRADES & STANDS
- 506 SPLY DEMAND AND PRIC
- 508 DOMESTIC MKT DEVELP
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG PRGN
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION
- 903 MULTI-USE-FOREST POTEN
- 904 WLDLFE AND FISH ECOL

0900 CITRUS SUB TROP FRUT
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 204 CNTR PESTS FRT & VEGS
- 205 CNTR DISE FRT & VEG
- 206 CNTR WEEDS FRT & VEG
- 214 PROTECT FROM POLLUTION
- 304 IMP BIO EFF FRT & VEGS
- 305 MECH PROD FRT & VEGS
- 306 PROD MGMT SYS F & V
- 402 PROD F & V IMP ACCEPT
- 403 NEW & IMP F&V PROD
- 404 MKT QUAL FRTS & VEGS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG PRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1000 FRUIT NUTS DECIDUOUS
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 603 TECH AID DEV CRTY
- 901 ALLEV POLLUTION
- 905 TREES BEAUTIFICATION
- 906 ORNAMENT & TURF DEV

1100 POTATOES
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 204 CNTR PESTS FRT & VEGS
- 205 CNTR DISE FRT & VEG
- 206 CNTR WEEDS FRT & VEG
- 214 PROTECT FROM POLLUTION
- 304 IMP BIO EFF FRT & VEGS
- 305 MECH PROD FRT & VEGS
- 306 PROD MGMT SYS F & V
- 402 PROD P & V IMP ACCEPT
- 403 NEW & IMP F&V PROD
- 404 MKT QUAL FRTS & VEGS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG PRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1200 VEGETABLES
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 204 CNTR PESTS FRT & VEGS
- 205 CNTR DISE FRT & VEG
- 206 CNTR WEEDS FRT & VEG
- 214 PROTECT FROM POLLUTION
- 304 IMP BIO EFF FRT & VEGS
- 305 MECH PROD FRT & VEGS
- 306 PROD MGMT SYS P & V
- 402 PROD F & V IMP ACCEPT
- 403 NEW & IMP F&V PROD
- 404 MKT QUAL FRTS & VEGS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1300 ORNAMENTALS TURF
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 603 TECH AID DEV CRTY
- 901 ALLEV POLLUTION
- 905 TREES BEAUTIFICATION
- 906 ORNAMENT & TURF DEV

1400 CORN
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD FC

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1400 CORN
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 709 REDUCE HAZ HLTH & SFTY
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1500 GRAIN SORGHUM
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1600 RICE
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1700 WHEAT
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION

COMMODITY CODE — PESEARCH PROBLEM AREA (RPA)

1700 WHEAT
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 709 REDUCE HAZ HLTH & SFTY
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1800 OTHER SMALL GRAINS
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

1900 PASTURE
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

2000 FORAGE CROPS
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT

COMMODITY CODE — RESEARCH PROBLEM AREA (RPA)

2000 FORAGE CROPS
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

2100 COTTON
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 705 REDUCE HAZ HLTH & SFTY
- 807 AGRIC ECONOMIC CHANGE
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

2200 COTTONSEED
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 308 MECH PROD FIELD CROPS
- 405 PROD FLD CROP IMP ACPT
- 406 NEW IMP FOOD FLD CROP
- 407 NEW IMP NON-FOOD PC
- 408 MKT QUAL FIELD CROPS
- 501 IMP GRADES & STANDS
- 503 MKTG EFF AGRI PRODS
- 506 SPLY DEMAND AND PRIC
- 507 COMP REL IN AGRIC
- 508 DOMESTIC MKT DEVELP
- 509 PERFORMANCE MKTG SYS
- 601 FGN MKT DEVELP
- 603 TECH AID DEV CRTY
- 604 PRD DVLPMT/MKTG FRGN
- 701 TOX RES IN FOOD
- 702 FOOD PROT FROM TOX
- 703 FOOD CONSUMP HABITS
- 704 HOME COMM FOOD SERV
- 708 HUMAN NUTRITION
- 808 GOV'T PROGRAMS
- 901 ALLEV POLLUTION

2300 SOYBEANS
- 102 SOIL PLNT WTR NUTRI
- 103 MGMT OF SALINE SOILS
- 105 CONSERV USE OF WATER
- 106 DRAIN AND IRRIGATION
- 107 WATERSHED PROT & MGMT
- 109 WEATHER ADAPT & MOD
- 113 REMOTE SENSING
- 207 CNTR PESTS FLD CROPS
- 208 CNTR DIS FIELD CROPS
- 209 CNTR WEEDS FLD CROPS
- 214 PROTECT FROM POLLUTION
- 307 IMP BIO EFF FLD CRP
- 308 MECH PROD FIELD CROPS
- 309 PROD MGMT SYS FLD CRP
- 405 PROD FLD CROP IMP ACPT

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2300	SOYBEANS	
406		NEW IMP FOOD FLD CROP
407		NEW IMP NON-FOOD PC
408		MKT QUAL FIELD CROPS
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMR HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
709		REDUCE HAZ HLTH & SFTY
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
2400	PEANUTS	
102		SOIL PLNT WTR NUTRI
103		MGMT OF SALINE SOILS
105		CONSERV USE OF WATER
106		DRAIN AND IRRIGATION
107		WATERSHED PROT & MGMT
109		WEATHER ADAPT & MOD
113		REMOTE SENSING
207		CNTR PESTS FLD CROPS
208		CNTR DIS FIELD CROPS
209		CNTR WEEDS FLD CROPS
214		PROTECT FROM POLLUTION
307		IMP BIO EFF FLD CRP
308		MECH PROD FIELD CROPS
309		PROD MGMT SYS FLD CRP
405		PROD FLD CROP IMP ACPT
406		NEW IMP FOOD FLD CROP
407		NEW IMP NON-FOOD PC
408		MKT QUAL FIELD CROPS
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMP HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
2500	OTHER OILSEED CROPS	
102		SOIL PLNT WTR NUTRI
103		MGMT OF SALINE SOILS
105		CONSERV USE OF WATER
106		DRAIN AND IRRIGATION
107		WATERSHED PROT & MGMT
109		WEATHER ADAPT & MOD
113		REMOTE SENSING
207		CNTR PESTS FLD CROPS
208		CNTR DIS FIELD CROPS
209		CNTR WEEDS FLD CROPS
214		PROTECT FROM POLLUTION
307		IMP BIO EFF FLD CRP
308		MECH PROD FIELD CROPS
309		PROD MGMT SYS FLD CRP
405		PROD FLD CROP IMP ACPT
406		NEW IMP FOOD FLD CROP
407		NEW IMP NON-FOOD PC
408		MKT QUAL FIELD CROPS
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CPTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMP HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
2600	TOBACCO	
102		SOIL PLNT WTR NUTRI
103		MGMT OF SALINE SOILS
105		CONSERV USE OF WATER
106		DRAIN AND IRRIGATION
107		WATERSHED PROT & MGMT
109		WEATHER ADAPT & MOD
113		REMOTE SENSING
207		CNTR PESTS FLD CROPS
208		CNTR DIS FIELD CROPS

COMMODITY CODE	RESEARCH PROBLEM AREA (RPA)	
2600	TOBACCO	
209		CNTR WEEDS FLD CROPS
214		PROTECT FROM POLLUTION
307		IMP BIO EFF FLD CRP
308		MECH PROD FIELD CROPS
309		PROD MGMT SYS FLD CRP
405		PROD FLD CROP IMP ACPT
407		NEW IMP NON-FOOD PC
408		MKT QUAL FIELD CROPS
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
709		REDUCE HAZ HLTH & SFTY
807		AGRIC ECONOMIC CHANGE
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
2700	SUGAR CROPS	
102		SOIL PLNT WTR NUTRI
103		MGMT OF SALINE SOILS
105		CONSERV USE OF WATER
106		DRAIN AND IRRIGATION
107		WATERSHED PROT & MGMT
109		WEATHER ADAPT & MOD
113		REMOTE SENSING
207		CNTR PESTS FLD CROPS
208		CNTR DIS FIELD CROPS
209		CNTR WEEDS FLD CROPS
214		PROTECT FROM POLLUTION
307		IMP BIO EFF FLD CRP
308		MECH PROD FIELD CROPS
309		PROD MGMT SYS FLD CRP
405		PROD FLD CROP IMP ACPT
406		NEW IMP FOOD FLD CROP
407		NEW IMP NON-FOOD PC
408		MKT QUAL FIELD CROPS
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMP HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
2800	MISC NEW CROPS	
102		SOIL PLNT WTR NUTRI
103		MGMT OF SALINE SOILS
105		CONSERV USE OF WATER
106		DRAIN AND IRRIGATION
107		WATERSHED PROT & MGMT
109		WEATHER ADAPT & MOD
113		REMOTE SENSING
204		CNTR PESTS FRT & VEGS
205		CNTR DISE FRT & VEG
206		CNTR WEEDS FRT & VEG
207		CNTR PESTS FLD CROPS
208		CNTR DIS FIELD CROPS
209		CNTR WEEDS FLD CROPS
214		PROTECT FROM POLLUTION
304		IMP BIO EFF FRT & VEGS
305		MECH PROD FRT & VEGS
306		PROD MGMT SYS F & V
307		IMP BIO EFF FLD CRP
308		MECH PROD FIELD CROPS
309		PROD MGMT SYS FLD CRP
402		PROD F & V IMP ACCEPT
403		NEW & IMP F&V PROD
404		MKT QUAL FRTS & VEGS
405		PROD FLD CROP IMP ACPT
406		NEW IMP FOOD FLD CROP
407		NEW IMP NON-FOOD PC
408		MKT QUAL FIELD CROPS
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMP HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
709		REDUCE HAZ HLTH & SFTY
808		GOV'T PROGRAMS
901		ALLEV POLLUTION

COMMODITY CODE	RESEARCH PROBLEM AREA (RPA)	
2900	POULTRY	
210		CONTR PESTS ANIMALS
211		CONTR DIS ANIMALS
212		CNTR INTER PARASITES
213		PROT ANMLS FROM TOXINS
214		PROTECT FROM POLLUTION
310		ANIMAL REPRODUCTION
311		IMP BIO EFF ANML PR
312		ENV STRESS IN ANML PR
313		PROD MGMT SYS ANML PR
317		MECH/STRUCTS ANML PRD
409		PROD ANML PR IMP ACCP
410		IMP MEAT MILK EGG PR
411		IMP NON-FOOD ANML PR
412		MKT QUAL ANIMAL PROD
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMP HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
807		AGRIC ECONOMIC CHANGE
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
3000	BEEF CATTLE	
210		CONTR PESTS ANIMALS
211		CONTR DIS ANIMALS
212		CNTR INTER PARASITES
213		PROT ANMLS FROM TOXINS
214		PROTECT FROM POLLUTION
310		ANIMAL REPRODUCTION
311		IMP BIO EFF ANML PR
312		ENV STRESS IN ANML PR
313		PROD MGMT SYS ANML PR
317		MECH/STRUCTS ANML PRD
409		PROD ANML PR IMP ACCP
410		IMP MEAT MILK EGG PR
411		IMP NON-FOOD ANML PR
412		MKT QUAL ANIMAL PROD
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMP HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
807		AGRIC ECONOMIC CHANGE
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
3100	DAIRY CATTLE	
210		CONTR PESTS ANIMALS
211		CONTR DIS ANIMALS
212		CNTR INTER PARASITES
213		PROT ANMLS FROM TOXINS
214		PROTECT FROM POLLUTION
310		ANIMAL REPRODUCTION
311		IMP BIO EFF ANML PR
312		ENV STRESS IN ANML PR
313		PROD MGMT SYS ANML PR
317		MECH/STRUCTS ANML PRD
409		PROD ANML PR IMP ACCP
410		IMP MEAT MILK EGG PR
411		IMP NON-FOOD ANML PR
412		MKT QUAL ANIMAL PROD
501		IMP GRADES & STANDS
503		MKTG EFF AGRI PRODS
506		SPLY DEMAND AND PRIC
507		COMP REL IN AGRIC
508		DOMESTIC MKT DEVELP
509		PERFORMANCE MKTG SYS
601		FGN MKT DEVELP
603		TECH AID DEV CRTY
604		PRD DVLPMT/MKTG FRGN
701		TOX RES IN FOOD
702		FOOD PROT FROM TOX
703		FOOD CONSUMP HABITS
704		HOME COMM FOOD SERV
708		HUMAN NUTRITION
807		AGRIC ECONOMIC CHANGE
808		GOV'T PROGRAMS
901		ALLEV POLLUTION
3200	SWINE	
210		CONTR PESTS ANIMALS
211		CONTR DIS ANIMALS

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COMMODITY CODE — RESEARCH PROBLEM AREA (RPA)

3200 SWINE
212 CNTR INTER PARASITES
213 PROT ANMLS FROM TOXINS
214 PROTECT FROM POLLUTION
310 ANIMAL REPRODUCTION
311 IMP BIO EFF ANML PR
312 ENV STRESS IN ANML PR
313 PROD MGMT SYS ANML PR
317 MECH/STRUCTS ANML PRD
409 PROD ANML PR IMP ACCP
410 IMP MEAT MILK EGG PP
411 IMP NCR-FOOD ANML PR
412 MKT QUAL ANIMAL PROD
501 IMP GRADES & STANDS
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
507 COMP REL IN AGRIC
508 DOMESTIC MKT DEVELP
509 PERFORMANCE MKTG SYS
601 FGN MKT DEVELP
603 TECH AID DEV CRTY
604 PRD DVLPMT/MKTG PRGN
701 TOX RES IN FOOD
702 FOOD PROT FROM TOX
703 FOOD CONSUMP HABITS
704 HOME COMM FOOD SERV
708 HUMAN NUTRITION
807 AGRIC ECONOMIC CHANGE
808 GOV'T PROGRAMS
901 ALLEV POLLUTION

3300 SHEEP AND WOOL
210 CONTR PESTS ANIMALS
211 CONTR DIS ANIMALS
212 CNTR INTER PARASITES
213 PROT ANMLS FROM TOXINS
214 PROTECT FROM POLLUTION
310 ANIMAL REPRODUCTION
311 IMP BIO EFF ANML PR
312 ENV STRESS IN ANML PR
313 PROD MGMT SYS ANML PR
317 MECH/STRUCTS ANML PRD
409 PROD ANML PR IMP ACCP
410 IMP MEAT MILK EGG PR
411 IMP NON-FOOD ANML PR
412 MKT QUAL ANIMAL PROD
501 IMP GRADES & STARDS
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
507 COMP REL IN AGRIC
508 DOMESTIC MKT DEVELP
509 PERFORMANCE MKTG SYS
601 FGN MKT DEVELP
603 TECH AID DEV CRTY
604 PRD DVLPMT/MKTG PRGN
701 TOX RES IN FOOD
702 FOOD PROT FROM TOX
703 FOOD CONSUMP HABITS
704 HOME COMM FOOD SERV
708 HUMAN NUTRITION
807 AGRIC ECONOMIC CHANGE
808 GOV'T PROGRAMS
901 ALLEV POLLUTION

3400 OTHER ANIMALS
210 CONTR PESTS ANIMALS
211 CONTR DIS ANIMALS
212 CNTR INTER PARASITES
213 PROT ANMLS FROM TOXINS
214 PROTECT FROM POLLUTION
310 ANIMAL REPRODUCTION
311 IMP BIO EFF ANML PR
312 ENV STRESS IN ANML PR
313 PROD MGMT SYS ANML PR
317 MECH/STRUCTS ANML PRD
409 PROD ANML PR IMP ACCP
410 IMP MEAT MILK EGG PP
411 IMP NON-FOOD ANML PR
412 MKT QUAL ANIMAL PROD
501 IMP GRADES & STANDS
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
507 COMP REL IN AGRIC
508 DOMESTIC MKT DEVELP
509 PERFORMANCE MKTG SYS
601 FGN MKT DEVELP
603 TECH AID DEV CRTY
604 PRD DVLPMT/MKTG PRGN
701 TOX RES IN FOOD
702 FOOD PROT FROM TOX
703 FOOD CONSUMP HABITS
704 HOME COMM FOOD SERV
708 HUMAN NUTRITION
807 AGRIC ECONOMIC CHANGE
808 GOV'T PROGRAMS
901 ALLEV POLLUTION

3500 BEES AND HONEY
314 BEES OTH POLLNTNG INS
603 TECH AID DEV CRTY

3600 FARM SUPP & FACILITS
315 IMP STRUC FARM SUPP
317 MECH/STRUCTS ANML PRD

3600 FARM SUPP & FACILITS
501 IMP GRADES & STANDS
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
507 COMP REL IN AGRIC
508 DOMESTIC MKT DEVELP
509 PERFORMANCE MKTG SYS
513 PRICE ANAL FRST PROD
601 FGN MKT DEVELP
603 TECH AID DEV CRTY
604 PRD DVLPMT/MKTG PRGN
702 FOOD PROT FROM TOX
709 REDUCE HAZ HLTH & SFTY
901 ALLEV POLLUTION
904 WLDLFE AND FISH ECOL

3700 CLOTHING & TEXTILES
407 NEW IMP NON-FOOD PC
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
507 COMP REL IN AGRIC
508 DOMESTIC MKT DEVELP
509 PERFORMANCE MKTG SYS
601 FGN MKT DEVELP
603 TECH AID DEV CRTY
604 PRD DVLPMT/MKTG PRGN
705 SEL CARE CLOTH & TEXTL
706 CONTR INSECTS AFF MAN
709 REDUCE HAZ HLTH & SFTY

3800 FOOD
318 NCN-COM BIO TECH/BIMET
402 PROD F & V IMP ACCEPT
403 NEW & IMP F&V PROD
404 MKT QUAL FRTS & VEGS
405 PROD FLD CROP IMP ACPT
406 NEW IMP FOOD FLD CROP
408 MKT QUAL FIELD CROPS
409 PROD ANML PR IMP ACCP
410 IMP MEAT MILK EGG PR
412 MKT QUAL ANIMAL PROD
501 IMP GRADES & STANDS
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
507 COMP REL IN AGRIC
508 DOMESTIC MKT DEVELP
509 PERFORMANCE MKTG SYS
601 FGN MKT DEVELP
603 TECH AID DEV CRTY
604 PRD DVLPMT/MKTG PRGN
701 TOX RES IN FOOD
702 FOOD PROT FROM TOX
703 FOOD CONSUMP HABITS
704 HOME COMM FOOD SERV
708 HUMAN NUTRITION
901 ALLEV POLLUTION

3900 HOUSING & EQUIP
106 DRAIN AND IRRIGATION
107 WATERSHED PROT & MGMT
113 REMOTE SENSING
315 IMP STRUC FARM SUPP
317 MECH/STRUCTS ANML PRD
401 NEW IMP FOREST PROD
503 MKTG EFF AGRI PRODS
509 PERFORMANCE MKTG SYS
513 PRICE ANAL FRST PROD
603 TECH AID DEV CRTY
706 CONTR INSECTS AFF MAN
709 REDUCE HAZ HLTH & SFTY
801 RURAL HOUSING
901 ALLEV POLLUTION
904 WLDLFE AND FISH ECOL

4000 PEOPLE AS INDIVIDUALS
214 PROTECT FROM POLLUTION
603 TECH AID DEV CRTY
702 FOOD PROT FROM TOX
703 FOOD CONSUMP HABITS
706 CONTR INSECTS AFF MAN
707 TRANS ANIML MAN DIS
708 HUMAN NUTRITION
709 REDUCE HAZ HLTH & SFTY
801 RURAL HOUSING
802 INDIV & FAM DEC MAKING
803 RURAL POVERTY
804 ECON POTENT RURL PEO
805 COMMUNICAT RURAL PEO
806 ADJUSTMENT TO CHANGE
907 RURAL INCOME IMP

4100 FAMILY MEMBERS
603 TECH AID DEV CRTY
702 FOOD PROT FROM TOX
703 FOOD CONSUMP HABITS
707 TRANS ANIML MAN DIS
708 HUMAN NUTRITION
709 REDUCE HAZ HLTH & SFTY
801 RURAL HOUSING
802 INDIV & FAM DEC MAKING
803 RURAL POVERTY
804 ECON POTENT RURL PEO
805 COMMUNICAT RURAL PEO
806 ADJUSTMENT TO CHANGE

4100 FAMILY MEMBERS
907 RURAL INCOME IMP

4200 FARM AS BUSINESS
316 FARM BUSINESS MGMT
603 TECH AID DEV CRTY
807 AGRIC ECONOMIC CHANGE
808 GOV'T PROGRAMS

4300 SCC POLIT ORGANIZ
603 TECH AID DEV CRTY
803 RURAL POVERTY
804 ECON POTENT RURL PEO
805 COMMUNICAT RURAL PEO
806 ADJUSTMENT TO CHANGE
807 AGRIC ECONOMIC CHANGE
902 OUTDOOR RECREATION
907 RURAL INCOME IMP
908 RURAL INSTITUT IMP

4400 AGRIC ECONOMY U S
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
601 FGN MKT DEVELP
603 TECH AID DEV CRTY
807 AGRIC ECONOMIC CHANGE
808 GOV'T PROGRAMS

4500 AGRIC ECONOMY FORGN
601 FGN MKT DEVELP
602 EVAL FGN FOOD AID PGM
603 TECH AID DEV CRTY

4600 FARM COOPERATIVES
503 MKTG EFF AGRI PRODS
509 PERFORMANCE MKTG SYS
510 GROUP ACT MKT POWER
603 TECH AID DEV CRTY
704 HOME COMM FOOD SERV
807 AGRIC ECONOMIC CHANGE

4700 OTH MARKET PROCESS
503 MKTG EFF AGRI PRODS
508 DOMESTIC MKT DEVELP
509 PERFORMANCE MKTG SYS
510 GROUP ACT MKT POWER
603 TECH AID DEV CRTY
704 HOME COMM FOOD SERV
807 AGRIC ECONOMIC CHANGE

4800 MARKETING SYSTEMS
503 MKTG EFF AGRI PRODS
509 PERFORMANCE MKTG SYS
510 GROUP ACT MKT POWER
603 TECH AID DEV CRTY
807 AGRIC ECONOMIC CHANGE
808 GOV'T PROGRAMS

6100 WEEDS
102 SOIL PLNT WTR NUTRI
105 CONSERV USE OF WATER
106 DRAIN AND IRRIGATION
113 REMOTE SENSING
206 CNTR WEEDS FRT & VEG
205 CNTR WEEDS FID CROPS
318 NCN-COM BIO TECH/BIMET
603 TECH AID DEV CRTY
701 TOX RES IN FOOD
901 ALLEV POLLUTION

6200 SEED RESEARCH
102 SOIL PLNT WTR NUTRI
106 DRAIN AND IRRIGATION
304 IMP BIO EFF FRT & VEGS
307 IMP BIC EFF FLD CRP
318 NCN-COM BIO TECH/BIMET
402 PROD F & V IMP ACCEPT
405 PROD FLD CROP IMP ACPT
408 MKT QUAL FIELD CROPS
501 IMP GRADES & STANDS
503 MKTG EFF AGRI PRODS
506 SPLY DEMAND AND PRIC
603 TECH AID DEV CRTY
702 FOOD PROT FROM TOX

6300 BIO CELL SYSTEMS
102 SOIL PLNT WTR NUTRI
106 DRAIN AND IRRIGATION
318 NCN-COM BIC TECH/BIMET
603 TECH AID DEV CRTY
701 TOX RES IN FOOD

6400 EXP DESIGN/STAT METHOD
102 SOIL PLNT WTR NUTRI
106 DRAIN AND IRRIGATION
318 NCN-COM BIC TECH/BIMET
511 IMP AGRIC STATISTICS
603 TECH AID DEV CRTY

6500 INVERTEBRATES
109 WEATHER ADAPT & MOD
201 CNTRI FORST INSECTS
204 CNTR PESTS FRT & VEGS
207 CNTR PESTS FID CROPS

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COMMODITY CODE	RESEARCH PROBLEM AREA (RPA)
6500	INVERTEBRATES
210	CONTR PESTS ANIMALS
211	CONTR DIS ANIMALS
212	CNTR INTER PARASITES
318	NON-COM BIO TECH/BIMET
603	TECH AID DEV CRTY
706	CONTR INSECTS AFF MAN
904	WLDLFE AND FISH ECOL
6600	MICROORGANISMS,VIRUSES
102	SOIL PLNT WTR NUTRI
106	DRAIN AND IRRIGATION
202	CONTROL FOREST DIS
205	CNTR DISE FRT & VEG
208	CNTR DIS FIELD CROPS
211	CONTR DIS ANIMALS
212	CNTR INTER PARASITES
318	NON-COM BIO TECH/BIMET
603	TECH AID DEV CRTY
702	FOOD PROT FROM TOX
901	ALLEV POLLUTION
6700	PLANTS
102	SOIL PLNT WTR NUTRI
103	MGMT OF SALINE SOILS
105	CONSERV USE OF WATER
106	DRAIN AND IRRIGATION
107	WATERSHED PROT & MGMT
109	WEATHER ADAPT & MOD
113	REMOTE SENSING
204	CNTR PESTS FRT & VEGS
205	CNTR DISE FRT & VEG
206	CNTR WEEDS FRT & VEG
207	CNTR PESTS FLD CROPS
208	CNTR DIS FIELD CROPS
209	CNTR WEEDS FLD CROPS
214	PROTECT FROM POLLUTION
304	IMP BIO EFF FRT & VEGS
305	MECH PROD FRT & VEGS
306	PROD MGMT SYS F & V
307	IMP BIO EFF FLD CRP
308	MECH PROD FIELD CROPS
309	PROD MGMT SYS FLD CRP
315	IMP STRUC FARM SUPP
318	NON-COM BIO TECH/BIMET
402	PROD F & V IMP ACCEPT
403	NEW & IMP F&V PROD
404	MKT QUAL FRTS & VEGS
405	PROD FLD CROP IMP ACPT
406	NEW IMP FOOD FLD CROP
407	NEW IMP NON-FOOD PC
408	MKT QUAL FIELD CROPS
501	IMP GRADES & STANDS
503	MKTG EFF AGRI PRODS
506	SPLY DEMAND AND PRIC
507	COMP REL IN AGRIC
508	DOMESTIC MKT DEVELP
509	PERFORMANCE MKTG SYS
603	TECH AID DEV CRTY
701	TOX RES IN FOOD
708	HUMAN NUTRITION
808	GOV'T PROGRAMS
901	ALLEV POLLUTION
6800	ANIMALS(VERTEBRATES)
210	CONTR PESTS ANIMALS
211	CONTR DIS ANIMALS
212	CNTR INTER PARASITES
213	PROT ANMLS FROM TOXINS
214	PROTECT FROM POLLUTION
310	ANIMAL REPRODUCTION
311	IMP BIO EFF ANML PR
312	ENV STRESS IN ANML PR
313	PROD MGMT SYS ANML PR
315	IMP STRUC FARM SUPP
317	MECH/STRUCTS ANML PRD
318	NON-COM BIO TECH/BIMET
409	PROD ANML PR IMP ACCP
410	IMP MEAT MILK EGG PR
411	IMP NON-FOOD ANML PR
412	MKT QUAL ANIMAL PROD
501	IMP GRADES & STANDS
503	MKTG EFF AGRI PRODS
506	SPLY DEMAND AND PRIC
507	COMP REL IN AGRIC
508	DOMESTIC MKT DEVELP
509	PERFORMANCE MKTG SYS
603	TECH AID DEV CRTY
701	TOX RES IN FOOD
702	FOOD PROT FROM TOX
708	HUMAN NUTRITION
808	GOV'T PROGRAMS
901	ALLEV POLLUTION
6900	RESEARCH ON RSCH MGMT
114	RSCH ON MGMT OF RSCH
603	TECH AID DEV CRTY
7000	RSCH EQUIP & TECHNOLOGY
109	WEATHER ADAPT & MOD
110	APPRAIS FORST & RANGS
111	BIOL CULT MGMT FORSTS
113	REMOTE SENSING
214	PROTECT FROM POLLUTION
302	IMP FOREST ENG SYS
304	IMP BIO EFF FRT & VEGS
307	IMP BIO EFF FLD CRP
311	IMP BIO EFF ANML PR
318	NON-COM BIO TECH/BIMET
402	PROD F & V IMP ACCEPT
405	PROD FLD CROP IMP ACPT
410	IMP MEAT MILK EGG PR
511	IMP AGRIC STATISTICS
603	TECH AID DEV CRTY
9900	UNCLASSIFIED
990	UNCLASSIFIED

GOALS OF AGRICULTURAL RESEARCH

I. Insure a stable and productive agriculture for the future through wise management of natural resources.

II. Protect forests, crops and livestock from insects, diseases, and other hazards.

III. Produce an adequate supply of farm and forest products at descreasing real production costs.

IV. Expand the demand for farm and forest products by developing new and improved products and processes and enhancing product quality.

V. Improve efficiency in the marketing system.

VI. Expand export markets and assist developing nations.

VII. Protect consumer health and improve nutrition and well-being of the American people.

VIII. Assist rural Americans to improve their level of living.

IX. Promote community improvement including development of beauty, recreation, environment, economic opportunity, and public services.

X. Enhance the national capacity to develop and disseminate new knowledge and new or improved methodology for solving current problems or new problems that will arise in the future. Research under Goal X is conducted under all the RPAs of Goals I - IX.

GOAL I

INSURE A STABLE AND PRODUCTIVE AGRICULTURE FOR THE FUTURE THROUGH WISE MANAGEMENT OF NATURAL RESOURCES

The Nation's natural resources, including soil, water, forest, and range, provide the basis for economic growth and an adequate supply of farm and forest products. Essential natural resources must be maintained, developed, and used to meet production and general welfare needs. This involves reducing soil erosion and controlling water runoff. It includes increasing our efforts to improve forest management.

RPA's 101-114, inclusive.

RPA 101. APPRAISAL OF SOIL RESOURCES

Agricultural agencies make appraisals of the nation's soil resources through soil classification and mapping the classified soil types. Research in support of soil mapping is concerned with identifying the parameters to be measured including the correlation of soil map information with the use to be made of the data (e.g., crop production, housing developments, zoning), and the development of effective and economic ways of reporting the results.

In recent years the use of these findings has extended far beyond that made by farmers and ranchers. For example, sanitarians and home builders are using the information for judging the capacity of soils to absorb septic tank effluent; architects and developers use the information for site evaluation and foundation design; urban planners and other public officials use soil surveys for both general and operational planning of land use in rapidly expanding areas. Soil surveys can also be used to show soil characteristics such as susceptibility to frost heave or slippage, depth to water table, depth to rock or other impermeable barriers, bearing strength, flood hazard, and soil erosion potential which affect suitability of a site for specific uses.

Areas of research include:

(a) Physical, chemical, mechanical and biological characteristics of soils needed in soil classification and management.
(b) Identification of soil types and their suitability for specific uses.
(c) Appraisal of how soils behave under different levels of management and use such as crop production, logging, grazing, water utilization and yield, and other agricultural, forestry and non-agricultural uses. This type of research indicates the general type and level of intensity of use to which a tract of land is suited.

Classification Guidelines:

Activities:

4100 Resource description and inventory

Commodities, etc.:

0100 Soil and land

RPA 102. SOIL, PLANT, WATER, NUTRIENT RELATIONSHIPS

This problem area is concerned with the chemical and physical nature of interrelationships among soils, plants, water, and nutrients. The objective is to improve, maintain, or restore the inherent production capability of soils.

Areas of research include:

(a) Factors which limit root development of plants.
(b) Development of practical methods for ameliorating unfavorable conditions, such as tillage pans, nutrient deficiencies, and improper air-water relationships.
(c) Ways to maintain and improve soil structure by soil amendments and by soil, crop, tillage and management systems.
(d) The effect of physical, chemical and biological properties of soils on soil structure, resistance to erosion, availability of plant nutrients, and the general environment for plant roots.
(e) Chemical changes of nutrient elements in different kinds of soils and the factors affecting uptake by various crops.
(f) Methods to make beneficial changes in energy dissipation and utilization in the soil-plant-atmosphere relationships.
(g) Interrelationships between soil properties and aspects of plant physiology.
(h) Subsidence and fire damage to organic soils.

Exclude: (1) Research that can be considered as "improvement of biological efficiency" when the primary orientation is to the response made by particular plant types (e.g. corn) to variables of soil, plant spacing, fertilizer, water, etc. (Use RPA 304 or 307).

Classification Guidelines:

Activities:

4300 Resource development, conservation and management
4810 Protection against fire
4820 Protection against flood
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
5000 Improving biological efficiency of plants and animals

Commodities:

0100 Soil and land
0200 Water
0300 Watersheds and river basins (See subcodes)
0600, 0700, 0900-2100, 2300-2800 (See Commodity Classification - Table C)
6100-6400, 6600, 6700 (See Commodity Classification - Table C)

RPA 103. MANAGEMENT OF SALINE AND SODIC SOILS AND SALINITY

Injurious accumulations of salts may occur in the root zone of the soil because salts move upward in the soil with water and are left behind as the water evaporates. Salts can be leached downward to the ground water or to a drainage system as the result of heavy rainfall or irrigation.

Salts generally come from irrigation water, but some soils naturally contain excessive quantities. Many complex problems are created by the combination of salts, soils, and climatic conditions and quality of irrigation or leaching water. Disposal of salts without degrading water quality for the down stream user is a critical problem. In the arid West injurious concentrations of salts in the soil have impaired the use of 25 percent of the 34 million acres of irrigated land. Salinity and brackish water problems also occur in seaboard areas.

Areas of research include:

(a) Leaching theory and methods to predict rates and amounts of various qualities of leaching waters and related drainage system requirements to reclaim soils having salt accumulations.
(b) Methods of treating and managing saline irrigation water and leaching effluents.
(c) Management criteria for use of brackish water of various qualities under a wide range of soil, crop, and environmental conditions.
(d) Tillage, crop, soil amendment, leaching, and profile modification practices for crop production on saline and sodic soils.
(e) The interactions of soil structure, dissolved and absorbed ions, microbial activity, organic matter, and moisture movement in the root zone of salt-affected soils.
(f) Procedures and equipment for determining the salinity status of soils and irrigation waters.
(g) Research on plants or cropping sequences to manage or improve saline soils.
(h) Breeding and selection of salt tolerant varieties.

Classification Guidelines:

Activities:

4300 Resource development, conservation, and management
4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals

Commodities, etc.:

0100 Soil and land
0200 Water
0600, 0700, 0900-2100 (See Commodity Classification - Table C)
2300-2800, 6700 (See Commodity Classification - Table C)

RPA 104. ALTERNATIVE USES OF LAND

Alternative uses of land need to be evaluated to determine which ones will provide the greatest short- and long-range social and economic benefits. Population growth, advances in agricultural technology, changing consumer demands, urban and suburban growth, needs of people at home and abroad, recreational needs, and other factors result in changing demands upon our nation's fixed supply of land. Soil conservation, forestry and water, watersheds, recreation and community development programs and policies should be based upon the relative advantages of alternative land uses.

Areas of research include:

(a) Inventory and appraisal of current and potential land uses.
(b) Parameters and models for evaluating economic benefits.
(c) Appraisal of future land requirements for non-agricultural uses such as forestry, recreation, highway, urban and industrial development.
(d) Economics of conservation and management programs and practices.
(e) Factors affecting land use such as:
    (1) Government programs
    (2) Tax policies
    (3) New technology
    (4) Laws and ordinances
    (5) Land ownership patterns and trends
    (6) Population changes

Classification Guidelines:

Activities:

4100 Resource description and inventory
4400 Evaluation of alternative uses and methods of use
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0100 Soil and land
0200 Water
0300 Watersheds and river basins (See subcodes)

RPA 105. CONSERVATION AND EFFICIENT USE OF WATER

Virtually all of the nation's water supply arrives as precipitation upon the land. Seventy percent of this supply is lost through evaporation and transpiration. The remaining 30 percent is subject to increasing competition among agricultural, industrial and domestic users. Increased efficiency in collecting, storing, conveying, using and reusing available supplies becomes essential.

One example of a reclaimable supply is on irrigated farms where about 76 million acre feet of water are lost by evaporation, seepage, wasteful runoff during irrigation, and use by non-beneficial plants.

Areas of research include:

(a) Moisture and heat flow in soils for more effective procedures to monitor and improve effectiveness of water storage in the soil profile and underground aquifers.
(b) Improved soil and water conservation systems and residue management systems which will be compatible with modern mechanized agricultural practices.
(c) Management practices, breeding and selecting of plant varieties, and environmental management practices to make efficient use of water through the various stages of plant growth.
(d) Alternative practical techniques for reducing water loss from plant, soil and water surfaces.
(e) Practices to enhance water infiltration, transmission, and use by plants.
(f) Methods to conserve, replenish and effectively use water in underground storage.
(g) Research designed to control phreatophytes and aquatic weeds to reduce the damages or losses they cause.

Exclude: (1) Research on aquatic weeds as a pollutant. (Use RPA 901).

Classification Guidelines:

Activities:

4100 Resource description and inventory
4300 Resource development, conservation, and management
4700 Protection against weeds and their control agents (aquatic and phreatophytes only)
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)

Commodities, etc.:

0100 Soil and Land
0200 Water
0300 Watersheds and river basins (See subcodes)
0600, 0700, 0900-2100, 2300-2800 (See Commodity Classification - Table C)
6100 Weeds
6700 Plants

RPA 106. EFFICIENT DRAINAGE AND IRRIGATION SYSTEMS AND FACILITIES

Excess water is a problem on nearly 60 million acres of cropland. Almost 40 million acres of land are under irrigation management. Water control structures represent expensive features of irrigation and drainage systems. Improved design of facilities and systems will result in more efficient use of land, water, and capital resources.

Areas of research include:

(a) Theory of water flow for more efficient irrigation system design.
(b) Methods of automating irrigation systems to reduce labor and increase efficiency.
(c) New concepts and improved design of drainage systems.
(d) New materials, systems, equipment, and installation techniques to reduce construction and maintenance costs of drainage and irrigation systems.
(e) Use of solar energy and air turbulence to speed the drying of poorly drained soils.
(f) Methods for combining irrigation and drainage systems to increase efficiency of water and system use.
(g) Improved hydraulic design of water control structures to reduce construction cost and maintain safety of structures.
(h) Methods for determining irrigation water requirements giving consideration to water use by plants, effective rainfall, and water losses during the following application.
(i) Equipment for uniform distribution of irrigation water with particular emphases on overhead and subsurface systems.

Classification Guidelines:

Activities:

4300 Resource development, conservation and management

Commodities, etc.:

0100 Soil and land
0200 Water
0600, 0700, 0900-2100, 2300-2800 (See Commodity Classification - Table C)
3900 Structures and facilities (See subcodes)
6100-6400 (See Commodity Classification - Table C)
6600 Microorganisms, viruses, etc.
6700 Plants

RPA 107. WATERSHED PROTECTION AND MANAGEMENT

Nearly 12,000 agricultural and forested watersheds in the country are in the size category commonly encompassed in developments under the Watershed Protection and Flood Prevention Act, the Small Reclamation Projects Act, and similar programs. These watersheds include the cropland of the U.S. as well as the range and forest lands. Many of these watersheds need one or more of the following: flood prevention systems, sediment control, wind and water erosion control, and improved management for water yield and quality.

Erosion control is needed to protect the productive capacity of the land. Sediment control is needed to prevent unwanted deposition of eroded material in reservoirs, harbors, stream channels, streets and highways, or on flood-plain lands. Sediment in streams damages recreational values and must be removed from domestic and industrial water supplies.

Areas of research include:

(a) New concepts and mathematical expressions of the erosion processes by wind and water.
(b) Procedures for identifying sediment sources, predicting and measuring sediment deposition, and methods for sediment control.
(c) Measures for controlling erosion on watershed lands and stream channel systems in both rural and urban environments and methods for reclaiming eroded lands.
(d) Methods for quantifying the role of soil and vegetation in the hydrologic performance of watersheds and river basins and the impact of management practices which change topographic and vegetative characteristics.
(e) Improved procedures for use of watersheds and river basins to assure needed agricultural and forest products, keep soil erosion and sedimentation to an acceptable minimum, and supply reliable quantities of good quality water for domestic, agricultural, municipal and industrial uses.
(f) Alternative land and water management practices including cover manipulation to improve the quality, quantity, and timing of surface and subsurface water yields from watersheds and river basins.
(g) Alternative systems for managing water storage and movement to reduce floods and dispose of excess water, maintain stable stream channels, and provide water for beneficial uses.
(h) Design of watershed structures and runoff control systems.

Classification Guidelines:

Activities:

4300 Resource development, conservation and management
4820 Protection against flood
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)

Commodities, etc.:

0100 Soil and land
0200 Water
0300 Watersheds and river basins (See subcodes)
0700 Range
0600 Trees, forests, and forest products (See subcodes)
0900-2100, 2300-2800 (See Commodity Classification - Table C)
3900 Structures and facilities (See subcodes)
6700 Plants

RPA 108. ECONOMIC AND LEGAL PROBLEMS IN MANAGEMENT OF WATER AND WATERSHEDS

Economically sound watershed and river basin plans are needed because of: (1) an expanding economy pressing on available water resources in some areas while in others, resources are under-employed, (2) production and income stabilization needs, (3) advancing technology, and (4) large capital investments made by public agencies in water resources projects. Also, efficient use of land and water resources in conditioned by laws, administrative regulations and other institutional arrangements which prescribe rules and procedures for transfer, use, and management of resources. Economic management of water in agriculture is an important factor in balanced development and growth of all water-using industries.

Areas of research include:

(a) Identifying and quantifying the benefits and costs of projects, especially intangible and non-market values such as recreation, beauty, and depressed area redevelopment.
(b) Zoning of water bodies and river basins for most desirable uses (flood plain occupancy, techniques for minimizing damages and adjusting to floods).
(c) Identification of potentials for developing major water resources to meet emerging national and regional requirements and objectives.
(d) Analyses of non-structural alternatives to reduce economic losses from flooding and other water-caused damage.
(e) Legal and institutional arrangements to achieve equitable and orderly water use and river basin development.
(f) Advantageous allocation of water among competitive uses.
(g) Determining benefits derived from wise management and multiple usage of water.
(h) Evaluating alternatives in watershed and river basin development.

Classification Guidelines:

Activities:

4100 Resource description and inventory
4300 Resource development, conservation, and management
4400 Evaluation of alternative uses and methods of use
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0200 Water
0300 Watersheds and river basins (See subcodes)

RPA 109. ADAPTATION TO WEATHER AND WEATHER MODIFICATION

The future holds many possibilities for changes in weather and climate ranging from dramatic major changes to micro-environmental changes around plants and animals. Research in agriculture has three tasks: (1) characterize existing climatic patterns and propose more effective ways of adjusting to these patterns. (2) specify modifications that are clearly desirable to farm and forest, and (3) learn how modifications proposed by others will affect agriculture or natural ecology.

Areas of research include:

(a) Understanding the sequences and duration of weather events and the response of relevant biota.
(b) Probabilities of occurrence of weather conditions critical to agricultural operations.
(c) Methods for incorporating climatology in the strategy, forecasts, and decision-making tactics of agriculture.
(d) Techniques for direct modification of weather events and elements.
(e) The biological consequences of weather modification.
(f) The phenomena of hail and other severe storms.
(g) Micro-climate and ways to modify it.
(h) Legal and economic implications and consequences of particular weather modifications.

Exclude: (1) Research on lightning and other weather-related forest fire research. (Use RPA 203).

Classification Guidelines:

Activities:

4100 Resource description and inventory
4300 Resource development, conservation and management
4500 Protection against insects, mites, snails and slugs and their control agents
4820 Protection against flood
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
4900 Biology of plants and animals
7300 Evaluation of public programs, policies and services
7500 Development of research equipment and technology

Commodities, etc.:

0100 Soil and land
0200 Water
0300 Watersheds and river basins (See subcodes)
0400 Air and climate
0600, 0700, 0900-2800 (See Commodity Classification - Table C)
6500, 6700 (See Commodity Classification - Table C)
7000 Research equipment and technology (Such as remote sensing)

RPA 110. APPRAISAL OF FOREST AND RANGE RESOURCES

Periodic appraisals of forest and range resources of the nation are essential to determine the adequacy of public conservation policies and programs and to guide the development of private forest and range enterprises.

The timber resources of the nation, including some 500 million acres of commercial forest land, vary greatly in productivity and availability for industrial use. They show widely divergent trends in growth, depletion and quality. The increasing use of resource data to evaluate future needs for Federal and State forestry programs and to provide guidance for the continuing expansion of wood-using industries in various regions makes it imperative that appraisals of timber resources be intensified and kept up to date.

The range and wildlife habitat resources of the nation vary widely in productivity, condition, and potential importance for substaining livestock and wildlife. There is growing need for a comprehensive appraisal of range conditions and opportunities for improving capacity and use to meet future demands for livestock forage, for water yield and for wildlife habitat.

Areas of research include:

(a) Determination of types of information needed and standards of estimate.
(b) Improvement of survey methods to reduce costs and increase the usefulness of information obtained, including emphasis on aerial photography, trend projections, and more effective use of computers for analysis of data.
(c) Appraisals in each State to provide up-to-date information on the quantity, quality, and productivity of forest and range resources to be used in evaluating the nation's timber and range situation.
(d) Appraisals for use in development of resource programs.
(e) Analysis of the timber outlook resulting from alternative management regimes for use in projection systems.

Exclude: (1) Research on use of remote sensing. (Use RPA 113).

Classification Guidelines:

Activities:

4100 Resource description and inventory
7500 Development of research equipment and technology

Commodities, etc.:

0100, 0200, 0500 (See Commodity Classification - Table C)
0600 Trees, forests and forest products (See subcodes)
0700 Range
0800 Fish, shellfish, game and fur-bearing animals and other wildlife and their habitats (See subcodes)
7000 Research equipment and technology (Such as remote sensing)

RPA 111. BIOLOGY, CULTURE AND MANAGEMENT OF FORESTS AND TIMBER-RELATED CROPS

Culture and management are directed at producing adequate supplies at reasonable cost, by methods that harmonize with other forest uses. For the 40 important commercial timber types in the United States, it is necessary to develop techniques for intensive culture and for combining timber culture with other uses. The major job is to find out how to convert wild forests to forests managed for single or multiple objectives, in the shortest time and at least cost. Each type has distinctive silvicultural characteristics.

Research includes investigations of biological processes and ecological relationships, improved cultural techniques for commercial and other timber species, including Christmas trees, and better methods for forecasting growth and quality changes in relation to management practices. Thus it provides the basis for selection of economic alternatives.

Improved management of existing and improved varieties offers many opportunities for improving the biological efficiency of trees.

Areas of research include:

(a) Physiology and ecology of forest trees and plant communities.
(b) Seed orchard management, seed harvesting, processing, and storage methods.
(c) Nursery culture, planting, and direct seeding.
(d) Cheaper ways to convert brushfields to timber stands.
(e) Techniques to encourage natural regeneration to perpetuate desirable forest species.
(f) Use of prescribed fire and other measures to control competing vegetation and stand composition.
(g) Planning and techniques for long-term management of forests for timber production in harmony with other uses including wilderness and parks.
(h) Theory, instrumentation and methods of mensuration for estimating timber growth, yield and quality.
(i) Cultural techniques including spacing, fertilization, liming, and irrigation for the production of timber-related crops from improved strains.
(j) Christmas tree culture.

Exclude: (1) Research on improvement of biological efficiency through breeding and selection. (Use RPA 301).
(2) Research on trees to enhance rural and urban environment. (Use RPA 905).

Classification Guidelines:

Activities:

4300 Resource development, conservation and management
4700 Protection against weeds and their control agents
4820 Protection against flood
4850 Protection against birds
4860 Protection against rodents and other mammals
4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
5200 Mechanization, improvement of physical efficiency, and development of structures and facilities
7500 Development of research equipment and technology

RPA 111. (Continued)

Commodities, etc.:

0600 Trees, forests, and forest products (See subcodes)
7000 Research equipment and technology (Such as remote sensing)

RPA 112. IMPROVEMENT OF RANGE RESOURCES

Research seeks to maintain and improve the productive capacity of range ecosystems. Native range in the United States includes over 900 million acres. It represents a continuum of sites and productivity potential from the deserts of the Southwest to the prairies of the Midwest and from the sea-level grasslands of Florida to the Alpine herblands of the high Rockies. Rangelands are important as a source of feed for beef cattle and sheep, in watershed protection, soil stabilization, wildlife habitat and recreation.

Areas of research include:

(a) Range characteristics including identification, physiological requirements, and nutritive value of forage plants.
(b) Understanding range ecosystems and their biotic and physical components.
(c) Projecting future demand for range forage and other benefits normally related to the wise use of rangelands.
(d) Improvement through breeding and selection of browse plants for forage as well as for protection and aesthetic purposes.
(e) Practices for conversion of brush and low-value trees to grassland.
(f) Revegetation of deteriorated areas by seeding desirable species, including improvement through breeding and selection of range forage plants.
(g) Systems for managing ranges including fertilization, mechanization, grazing pressure, and drainage so as to increase forage yields.
(h) Management practices that will harmonize grazing with timber growing, wildlife, recreation, and other land uses.

Exclude: (1) Research on protection from insects, etc. (Use RPA 207).
(2) Research on protection from diseases, etc. (Use RPA 208).
(3) Research on protection from weeds, etc. (Use RPA 209).
(4) Research on protection from fire. (Use RPA 203).
(5) Research on protection against poisonous plants. (Use RPA 213).

Classification Guidelines:

Activities:

4300 Resource development, conservation and management
4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
5200 Mechanization, improvement of physical efficiency, and development of structures and facilities

Commodities, etc.:

0700 Range

RPA 113. REMOTE SENSING

Programs in agriculture and forestry are heavily dependent on having timely informa tion for decision-making. Opportunities for increasing and sustaining the productiv ity of natural resources and for facilitating product flows in agriculture are depen dent on accurate, comprehensive, and timely information on resource use, availabil ity, productivity potential, and other characteristics. The paucity of such informa tion is a major obstacle in the economic development of the undeveloped regions o the world and a significant obstacle to the formulation of important policies and pro grams in the more fully developed regions.

Generally such information on natural resources has been obtained from ground sur veys. These surveys are costly, and, in the more remote and inaccessible regions o the world, they are difficult if not impossible to make.

The space age offers new, potentially powerful tools for use in the development of in formation gathering systems. Ways to exploit the advantages of earth-orbiting space craft, in addition to high flying aircraft, in acquiring many types of data need to b explored.

Areas of research include:

(a) Identifying and describing emittance and reflectance properties of biologica and physical materials through spectrophotometric analyses in the laboratory, o the ground, and from low altitudes.
(b) Identifying the single or combined wavelengths in the electromagnetic spectru that will yield unique and consistent imagery as it is acquired from progres sively higher altitudes.
(c) Specifying the minimum accuracy standards of data required for various agricul tural and forestry applications.
(d) Identification and analyses of economic benefits of the application of remot sensing technology to agriculture, forestry, and community planning.
(e) Integrating remote sensing components, sampling devices, and data analysi methods into workable information gathering systems.

Exclude: (1) Research on remote sensing of fire, lightning and fire-related phenom ena. (Use RPA 203).
(2) Research on specific problem identification, such as insect infesta tions, and inventories and surveys. (Use appropriate RPA).

Classification Guidelines:

Activities:

4100 Resource description and inventory
4300 Resource development, conservation and management
7500 Development of research equipment and technology

Commodities, etc.:

0100-2800 (See Commodity Classification - Table C)
3900, 6100, 6700 (See Commodity Classification - Table C)
7000 Research equipment and technology (Such as remote sensing)

RPA 114. RESEARCH ON MANAGEMENT OF RESEARCH

The resources which would be required to effectively conduct the research on all the researchable problems confronting us greatly exceed those available. Thus, it is necessary to decide which research should be supported and the level of funding. To date there is a paucity of information available to make such decisions. Consequently, it is essential to conduct research which will lead to more reliable estimates of the benefits and costs of specific research proposals so that the objectivity of the decision-making process can be improved. Research on research management also involves such things as studies on maximizing employee and research facility productivity, and on coordination of research effort among scientists throughout the nation.

Areas of research include:

(a) Developing criteria and techniques for evaluating research accomplishments and research proposals.
(b) Developing methods to measure the productivity of individual scientists and of research organizations.
(c) Exploring ways to create the kind of climate and incentives for researchers that will motivate them toward more effective research productivity.
(d) Exploring ways to maximize the productive use of costly, specialized facilities and equipment.
(e) Determining the needs and methods for developing, maintaining, and renewing the level of proficiency of scientists.
(f) Examining the interrelationships between teaching and research.
(g) Developing more effective means of communication among scientists, and between scientists and potential users of research findings.
(h) Evaluating the roles of cooperation and competition among scientists and research organizations in striving for productivity and efficiency in the research effort of the nation as a whole.

Classification Guidelines:

Activities:

7100 Improvement of research administration
7200 Information documentation and retrieval

Commodities, etc.:

6900 Research on research management (not research management *per se*)

GOAL II

PROTECT FORESTS, CROPS AND LIVESTOCK FROM INSECTS, DISEASES, AND OTHER HAZARDS

Lower unit costs and reduced risks result from eradication or control of diseases and pests and elimination of such hazards of the environment as climatic extremes, pollution, and other stresses. Serious fluctuations in farm and forest product supplies can be avoided when these production hazards are reduced or eliminated.

RPA's 201-214, inclusive.

RPA 201. CONTROL OF INSECTS AFFECTING FORESTS

Insects exact a heavy toll of trees of all ages each year killing many, and damaging and reducing the growth of surviving trees. Wildlife habitats are changed and fire danger is increased. Water yield may be altered and recreation use of forests reduced. Forest insect research can provide the information needed to reduce the continuing losses in productivity and value of forests and forest products, including Christmas trees. A sustained flow of new information provides the basis for safe, effective methods of control.

Areas of research include:

(a) The biosystematics, biology, ecology, physiology, pathology and genetics of forest insects and associated organisms.
(b) Factors that predispose forest trees to insect attack.
(c) Population dynamics of forest insects for early detection of trends and the role of biological and environmental factors affecting outbreaks.
(d) Early detection of potentially damaging outbreaks of insect populations by remote sensing, biological sensors and other techniques.
(e) Cultural techniques and integrated control systems to reduce insect damage.
(f) Parasites, predators, and diseases for control of damaging insects.
(g) Safer and more specific chemical and biotic insecticides including systemics.
(h) Identifying and synthesizing insect attractants and repellents.
(i) Direct and indirect control through radiation, chemical sterilization, hormonal disturbance and sound.
(j) Equipment and methods for applying controls.
(k) Protecting Christmas trees against insects.
(l) Breeding and selection of trees for resistance to insects.

Exclude: (1) Research on remote sensing. (Use RPA 113).
(2) Research on control of disease vectors. (Use RPA 202).
(3) Research on trees to enhance the environment. (Use RPA 905).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents

Commodities, etc.:

0600 Trees, forests and forest products (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)

RPA 202. CONTROL OF DISEASES, PARASITES AND NEMATODES AFFECTING FORESTS

Forest disease research is essential to protect and enhance the social and economic value of trees in forests and farm woodlots. Diseases reduce the utility of trees for recreation, wildlife habitat and timber production. They kill trees, discolor foliage, retard growth and cause decay leading to breakage and windfall. Prolonged droughts, wet periods, and changing climatic conditions accentuate tree disease problems.

Areas of research include:

(a) Taxonomy, cultural characteristics, nutritional requirements, enzyme systems, physiology and ecology of pathogens (fungi, bacteria, viruses, nematodes and mistletoes) and associated organisms in trees and in the soil in which they grow.
(b) Epidemiology of major destructive diseases and methods of quantifying their impact on trees and forests.
(c) Nature and action of noninfectious causes of tree diseases (climatic and weather variations, environmental stresses and nutritional imbalances).
(d) Cultural practices which deter the spread and increase of pathogens.
(e) Effectiveness of parasitic, predatory and antagonistic organisms for biological control of pathogens.
(f) Physiological and biochemical bases for safe and effective biological and chemical disease control measures.
(g) Equipment for application of spray materials.
(h) Control of insect vectors of disease pathogens.
(i) Protection of forest nurseries and Christmas trees against diseases.
(j) Breeding and selection of trees for resistance to diseases.

Exclude: (1) Research on trees to enhance the environment. (Use RPA 905).

Classification Guidelines:

Activities:

4600 Protection against diseases, parasites and nematodes and their control agents

Commodities, etc.:

0600 Trees, forests and forest products (See subcodes)
6600 Microorganisms, viruses, etc.

RPA 203. PREVENTION AND CONTROL OF FOREST AND RANGE FIRES

Fire research develops the knowledge for safeguarding more than one billion acres of public and private forest and range lands. Fires create air and water pollution, damage outdoor recreation, destroy natural beauty, injure natural resource-based industries, sweep rural communities and even cities, and take human lives. More than 150,000 forest fires occur annually. Development of new fire prevention methods to reduce the number of fires, new technology for fuel hazard reduction, and improved systems for fire detection and effective attack on threatening fires is needed.

Areas of research include:

(a) Atmospheric system dynamics, patterns and characteristics.
(b) The physics and chemistry of combustion.
(c) The behavior of fires as influenced by fire-starting agents, atmospheric circulation and local weather, fuels and topography.
(d) Fire intelligence systems, including electronic methods, remote sensing, automatic measurement of fire environment and computer integration of these factors into a fire danger rating system.
(e) Prevention of lightning fires and alteration of precipitation through weather modification.
(f) Reduction of fuel hazards through physical, chemical and prescribed fire treatments.
(g) Aerial and ground procedures for fighting fires.
(h) Integrated fire control and forest management systems which minimize fire losses.

Classification Guidelines:

Activities:

4810 Protection against fire

Commodities, etc.:

0600 Trees, forests, and forest products (See subcodes)
0700 Range
0800 Fish, shellfish, game and fur-bearing animals and other wildlife and their habitats (See subcodes)

RPA 204. CONTROL OF INSECTS, MITES, SLUGS, AND SNAILS ON FRUIT AND VEGETABLE CROPS

Control of these pests is a major item in production costs of fruits, vegetables, and edible tree nuts. Growers currently spend large sums each year for control measures and still sustain serious losses. The problem is made more difficult by the large number of plant species involved and by the diversity among the insects attacking these species. Associated with the insect problems are insecticide residue problems.

Areas of research include:

(a) Biological control through use of predators, parasites, diseases, male sterility techniques and chemical and physical attractants to lure insects into areas where they can be destroyed.
(b) Breeding and selection of fruits and vegetables for resistance to insects, mites, slugs, and snails.
(c) Studies on the genetic, nutritional and environmental factors that govern the activities of these pests.
(d) Methods to prevent introduction of new pests from foreign sources.
(e) Studies on the mechanisms by which these pests become resistant to chemical controls.
(f) Search for effective, safe, non-persistent chemical controls.
(g) Development of improved methods and equipment for applying chemical controls.

Exclude: (1) Research on control of insect vectors. (Use RPA 205).
(2) Research to alleviate soil, water, and air pollution. (Use RPA 901).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)
6700 Plants

RPA 205. CONTROL OF DISEASES AND NEMATODES OF FRUIT AND VEGETABLE CROPS

Control of diseases of fruits, vegetables, and edible tree nuts is expensive, imperfect and sometimes extremely difficult. Growers spend large sums each year in order to achieve partial control of the fungi, bacteria, viruses, and nematodes that cause diseases. Even with these efforts, diseases reduce crop yields substantially.

Areas of research include:

(a) Breeding and selection of fruits and vegetables for resistance to diseases.
(b) Crop sequence and soil management in relation to soil borne diseases.
(c) Micro-ecological studies of the soil in relation to soil borne diseases.
(d) Non-chemical control methods, such as use of hot water, dry heat, or irradiation of seed and tissues for propagation of disease-free stock.
(e) Crop sanitation and cultural technique studies including use of soil amendments.
(f) Methods of detecting minute traces of disease inoculum.
(g) Effective and less hazardous fungicides, bactericides, and nematicides.
(h) Methods and equipment for applying soil fumigants, sprays, or dusts to soils or plants.
(i) Control or elimination of vectors of plant disease.
(j) Exclusion of foreign diseases.
(k) Physiological studies of noninfectious diseases.
(l) Epidemiological and related meteorological studies as aids to disease avoidance and control.
(m) Environmental control to suppress disease development.
(n) Improved methods of producing, indexing, and distributing virus-free propagating stocks.

Classification Guidelines:

Activities:

4600 Protection against diseases, parasites and nematodes and their control agents

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6600 Microorganisms, viruses, etc.
6700 Plants

RPA 206. CONTROL OF WEEDS AND OTHER HAZARDS TO FRUIT AND VEGETABLE CROPS

Control of weeds and other hazards of fruits, vegetables, and edible tree nuts is a major item in the cost of producing these crops. Other hazards include mice, birds, rabbits and other forms of wildlife, hail, frost and other climatic extremes.

Areas of research include:

(a) Biological control of weeds.
(b) The relationship of plant anatomy, morphology, and physiology to the absorption and translocation of herbicides.
(c) Mechanism of action of herbicides.
(d) Search for more effective, faster degrading and less hazardous herbicides.
(e) Production practices to inhibit or prevent weed growth.
(f) Improved methods and equipment for herbicide application with special attention to control of drift.
(g) Control methods including attractants and repellents for rabbits, rodents, birds, deer, and other destructive forms of wildlife.
(h) More effective methods of minimizing losses from factors such as frost, hail, wind and other environmental extremes.

Classification Guidelines:

Activities:

4700 Protection against weeds and their control agents
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
4850 Protection against birds
4860 Protection against rodents and other mammals

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6100 Weeds
6700 Plants

RPA 207. CONTROL OF INSECTS, MITES, SNAILS AND SLUGS AFFECTING FIELD CROPS AND RANGE

Control of insects, mites, snails, and slugs adds greatly to production costs. In spite of large outlays, it is estimated that insects destroy about 10 percent of all field crops each year. It has become necessary to abandon many well established control practices because of residue and pollution problems.

Areas of research include:

(a) Study of heritable traits and breeding and selection to improve resistance to insects, mites, snails and slugs.
(b) Biological control of insects, etc. through use of predators.
(c) Insect population suppression through use of techniques to induce male sterility and through use of chemical and physical attractants to lure insects into areas where they can be destroyed.
(d) Search for more effective and safer insecticides.
(e) Improved methods and equipment for applying insecticides.
(f) Genetic, nutritional and environmental factors that govern the activities of insects.
(g) Production and cultural practices that minimize losses from insects.
(h) Studies of the mechanisms by which insects become resistant to insecticides.
(i) Methods to prevent introduction of harmful insects from foreign sources.

Exclude: (1) Research on control of insect vectors. (Use RPA 208).
(2) Research to alleviate soil, water and air pollution. (Use RPA 901).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents

Commodities, etc.:

0700 Range
1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)
6700 Plants

RPA 208. CONTROL OF DISEASES AND NEMATODES OF FIELD CROPS AND RANGE

Control of diseases is essential in order to provide an adequate supply of food, feed and fiber. Growers currently are spending large sums to achieve partial control of the fungi, bacteria, nematodes, and viruses that attack field, range and pasture crops. Even at this level of effort, diseases reduce yields substantially. Man is constantly challenged by newly developed races of disease organisms.

Areas of research include:

(a) Study of heritable traits and breeding and selection of field and range crops to improve resistance to diseases.
(b) Crop sequence and soil management in relation to soil borne diseases.
(c) Effective and less hazardous fungicides, bactericides and nematicides.
(d) Methods and equipment for applying soil fumigants, sprays, or dusts to soils or plants.
(e) Micro-ecological studies of the soil in relation to soil borne diseases.
(f) Non-chemical control methods, such as use of hot water, dry heat, or irradiation to obtain disease-free seed and tissue for propagation.
(g) Crop sanitation and cultural technique studies.
(h) Methods of detecting minute traces of disease inoculum.
(i) Control or elimination of vectors of plant disease.
(j) Exclusion of foreign diseases.
(k) Environmental control to suppress disease development.
(l) Epidemiological and related meteorological studies as aids to disease avoidance and control.

Exclude: (1) Research on breeding and selection of plants for reduced content of inherent toxic components. (Use RPA 405).

Classification Guidelines:

Activities:

4600 Protection against diseases, parasites and nematodes and their control agents

Commodities, etc.:

0700 Range
1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)
6600 Microorganisms, viruses, etc.
6700 Plants

RPA 209. CONTROL OF WEEDS AND OTHER HAZARDS OF FIELD CROPS AND RANGE

Weeds and other hazards in field crops and their control adds substantially to costs per unit of production. Research is directed at ways to reduce these costs. Hazards other than weeds include birds, other wildlife, frost and other environmental factors.

Areas of research include:

(a) Biological control of weeds.
(b) Effective, less hazardous herbicides.
(c) The relationship of plant anatomy, morphology, and physiology to the absorption and translocation of herbicides.
(d) Mechanism of action of herbicides.
(e) Production practices including cultivation and flaming to inhibit or prevent weed growth.
(f) Control methods including repellants and attractants for birds, rabbits, rodents, deer and other destructive forms of wildlife.
(g) Techniques for application of herbicides with special attention to control of drift.
(h) More effective methods of minimizing losses from factors such as frost, hail, wind and other environmental extremes.

Classification Guidelines:

Activities:

4700 Protection against weeds and their control agents
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
4850 Protection against birds
4860 Protection against rodents and other mammals

Commodities, etc.:

0700 Range
1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6100 Weeds
6700 Plants

RPA 210. CONTROL OF INSECTS AND EXTERNAL PARASITES AFFECTING LIVESTOCK, POULTRY, AND OTHER ANIMALS

Insects, ticks, leeches, and mites reduce animal productivity or act as vectors in the transmission of livestock and poultry diseases. Pests irritate and torment livestock throughout the year in all parts of the United States. The losses include reduced efficiency of weight gains and milk and egg production, damaged hides, and the cost and expense of applying insecticides. Methods of control have been developed, but they are less than adequate, either because of difficulty and expense or lack of effectiveness. Suppression of the screw worm by release of males made sterile by nuclear radiation is an example of successful application of research.

Areas of research include:

(a) Biology and life history of the pest.
(b) Use and development of irradiation, chemosterilants, attractants, repellents, and other non-insecticidal approaches to insect control.
(c) Absorption, metabolism, and excretion of insecticides by insects feeding on or in animals.
(d) Biological control of insects through use of predators.
(e) The nature of insect resistance to chemical controls.
(f) Evaluation of alternative control methods.
(g) Development of methods and equipment for applying or using control materials.

Exclude: (1) Research on control of insect vectors of disease. (Use RPA 211).
(2) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)
6800 Animals (Vertebrates)

RPA 211. CONTROL OF DISEASES OF LIVESTOCK, POULTRY AND OTHER ANIMALS

Diseases represent a major hazard to the production of an adequate and wholesome supply of animal products. They are a constant threat to the economic welfare of the livestock or poultry producer. Losses result from mortality, reduced productivity, cost of treatment or immunization, cost of regulatory programs, and condemnation of meat at the slaughter-house.

Areas of research include:

(a) The nature of the causative agents involved in animal diseases.
(b) Mechanisms of disease resistance and immunity.
(c) The interrelationship of environment, genetics, and infectious agents in the etiology of diseases.
(d) Methods of diagnosis, prevention, treatment, control, and eradication of diseases, including development of equipment.
(e) Methods of keeping infectious diseases, such as foot-and-mouth disease and rinderpest, out of this country.
(f) Evaluation of alternative control methods.
(g) Development of information on disease transmission by insects and other ectoparasites.
(h) Breeding and selection for disease resistance.
(i) Control of insect vectors of disease.

Exclude: (1) Research on disorders due to improper nutrition. (Use RPA 311).
(2) Research on disorders resulting from pollution. (Use RPA 214).
(3) Research on bloat and disorders due to ingestion of toxic plants, etc. (Use RPA 213).
(4) Research on environmental stress. (Use RPA 312).
(5) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).

Classification Guidelines:

Activities:

4600 Protection against diseases, parasites and nematodes and their control agents

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy Cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)
6600 Microorganisms, viruses, etc.
6800 Animals (Vertebrates)

RPA 212. CONTROL OF INTERNAL PARASITES OF LIVESTOCK, POULTRY, AND OTHER ANIMALS

Parasites, such as various kinds of worms, flukes, and coccidia cause losses in all parts of the country and in all seasons. Severe infestations of parasites may cause heavy direct losses to the livestock producer. Losses include mortality, reduced yield, condemnation of meat, feed wastage, and cost of drugs. Available treatments or control measures are still inadequate even for the parasites that have been the subject of considerable research.

Areas of research include:

(a) Biotic relationships in parasitism.
(b) Control by biological methods and management practices that minimize reliance on chemicals.
(c) Safe chemical means including systemics for combating parasites.
(d) Effective means of diagnosing parasitic infestation.
(e) Evaluation and development of control methods and equipment.
(f) Study of heritable traits and breeding and selection to improve resistance to parasites.

Exclude: (1) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).
(2) Research on insects, ticks, leeches and mites. (Use RPA 210).

Classification Guidelines:

Activities:

4600 Protection against diseases, parasites and nematodes and their control agents

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)
6600 Microorganisms, viruses, etc.
6800 Animals (Vertebrates)

RPA 213. PROTECT LIVESTOCK, POULTRY AND OTHER ANIMALS FROM TOXIC CHEMICALS, POISONOUS PLANTS, AND OTHER HAZARDS

Livestock and poultry may suffer losses in productivity from toxic chemicals, pesticides, poisonous plants, predators, ingestion of metal and other foreign bodies, and other hazards. Poisonous plants can cause heavy losses, particularly when pasture or range feed supplies are short or at seasons of the year when these plants are not discriminated against by the grazing animal. Predators cause heavy damage to sheep and turkeys. Bloat is a serious problem among ruminants.

Areas of research include:

(a) Determining the specific sites and mechanisms of poisoning, bloat and other disorders in order to learn the bases of these phenomena.
(b) The toxicology and safe levels of residues of pesticides and other chemicals, natural or synthetic, used directly on or ingested by livestock and poultry.
(c) Methods of reducing the ingestion of pesticides or other chemicals in or on animal feeds.
(d) The specific reasons for inter-species differences in detoxication mechanisms and sensitivity to poisoning by pesticides and other chemicals.
(e) Developing animal management practices that minimize the use of pesticides and other chemicals that leave toxic residues or that reduce the level of such residues.
(f) Prevention or alleviation of "hardware disease," and the effects of plants that cause bloat, poisoning, or deformities of livestock.
(g) Developing methods for combating nuclear radiation hazards to livestock.
(h) Methods for reducing animal losses from predators.
(i) Developing necessary equipment.

Exclude: (1) Breeding and selection of feed crops for reduced content of toxic components. (Use RPA 405).
(2) Research on pesticides applied to or ingested by livestock and poultry when the emphasis is clearly on reduction of the toxic content of foods. (Use RPA 701).
(3) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4700 Protection against weeds and their control agents
4860 Protection against rodents and other mammals
4880 Protection against allergens, toxins and poisonous plants
4890 Protection against radiation, noise and other hazards

Commodities, etc.

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6800 Animals (Vertebrates)

RPA 214. PROTECTION OF PLANTS, ANIMALS, AND MAN FROM HARMFUL EFFECTS OF POLLUTION

Pesticides, salts, sewage, cannery, textile, and animal wastes are generally considered objectionable when they occur as pollutants. Under some conditions they may be detrimental or cause effects detrimental to specific plants or animals.

Air pollutants such as sulfur dioxide, ethylene, and fluorides have long been recognized as harmful to vegetation. Recently, increasing importance has been attached to photochemical air pollution. Examples of plant damage are: fluoride damage to corn, citrus, and trees; ethylene damage to cotton; and ozone damage to cotton, grapes, tobacco, and trees.

Fluorides cause a serious malady in cattle known as fluorosis. Laboratory experiments with animals show that certain irritants common in polluted air can increase susceptibility to respiratory infection and increase mortality.

The pollutants which affect plants and animals may also affect man. Smog may cause eye irritation and increase the severity of respiratory ailments. Air borne allergens, such as pollens, cause suffering to those susceptible to them.

Areas of research include:

(a) Sources and concentrations of damaging pollutants and the intensity and frequency of occurrence of damage.
(b) Methodology and instrumentation for detection of pollutants and methods of analysis.
(c) Tolerance of plants, animals, man and insects to pollutants, singly and in combinations, especially to low-level pollution for prolonged periods of time.
(d) Methods and equipment for protecting plants, animals, and man from pollutants.
(e) Breeding and selection of plants and animals resistant to pollution.

Exclude: (1) Research on noise. (Use RPA 312).
(2) Research on trees to enhance rural and urban environment. (Use RPA 905).
(3) Research on alleviation of pollution. (Use RPA 901).
(4) Research on ornamentals and turf. (Use RPA 906).

Classification Guidelines:

Activities:

4830 Protection against pollutants
4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
7500 Development of research equipment and technology

Commodities, etc.:

0500-1200, 1400-2100, 2300-3400, 4000, (See Commodity Classification - Table C)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)
6700 Plants
6800 Animals (Vertebrates)
7000 Research equipment and technology (Such as remote sensing)

GOAL III

PRODUCE AN ADEQUATE SUPPLY OF FARM AND FOREST PRODUCTS AT DECREASING REAL PRODUCTION COSTS

Food and fiber supplies must be increased in order to meet rising domestic needs of our growing population and allow for expansion of exports of food and fiber to other nations. Consumption of farm and forest products can be increased and their competitive position in domestic and foreign markets improved by reducing production costs. Of particular concern are those farm products which are under pressure from synthetics and imports.

RPA's 301-318, inclusive.

RPA 301. GENETICS AND BREEDING OF FOREST TREES

Forest practice today is based largely on unimproved forest trees. Unlike crop plants, trees have not undergone centuries of controlled selection and breeding to make them more useful to man. There is strong evidence that through application of genetic principles we can produce tree varieties that grow faster, resist most major destructive pests, have specified wood properties, or yield more sap or gum. It should be feasible to develop straighter form, fewer limbs and resistance to insects, diseases and climatic extremes. Quality and yield of timber-related crops such as naval stores, maple sap and Christmas trees can be improved through application of research findings.

Areas of research include:

(a) Reproductive processes to induce early flowering and seed production.
(b) Individual and geographic variation within important tree species.
(c) Genetic and breeding methods including the induction of mutations to improve forest species through breeding.
(d) Selection and breeding of trees that are superior for the production of high quality timber and timber-related products.

Exclude: (1) Research on ornamentals. (Use RPA 906).
(2) Research on shade trees. (C-0615, 0624, and 0625). (Use RPA 905).
(3) Research on management practices. (Use RPA 111).
(4) Breeding and selection of trees for insect resistance. (Use RPA 201).
(5) Breeding and selection of trees for disease resistance. (Use RPA 202).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
5100 Increasing acceptability of farm and forest products

Commodities, etc.:

0600 Trees, forests, and forest products (See subcodes)

RPA 302. NEW AND IMPROVED FOREST ENGINEERING SYSTEMS

Improved forest engineering systems can reduce timber harvesting costs, increase and stabilize rural payrolls, reduce accidents and provide higher returns to industry. Over 100 billion board feet of timber in Alaska and the western States are inaccessible due to the high cost of road construction, steep terrain, soil conditions, and lack of equipment suitable for timber harvesting. In other States, because of the high proportion of small-size timber and the high percentage of defective timber, the economic feasibility of harvesting is limited.

Areas of research include:

(a) Harvesting systems for difficult access terrain.
(b) Low-cost bulk transport of wood chips.
(c) Harvesting systems for low-quality timber in areas such as Appalachia and the Lake States.
(d) Mechanization of production of specialized timber crops such as naval stores and Christmas trees.
(e) Mechanized systems for regeneration of timber.
(f) Design of equipment for safe handling of timber and other forest products.

Exclude: (1) Research on design of watershed structures and runoff control systems. (Use RPA 107).
(2) Research management systems, and special equipment, and facilities which will minimize dangers of fire, avalanches, and other natural hazards in outdoor recreation area. (Use RPA 902).

Classification Guidelines:

Activities:

5200 Mechanization, improvement of physical efficiency, and development of structures and facilities
7500 Development of research equipment and technology

Commodities, etc.:

0300 Watersheds and river basins (See subcodes)
0600 Trees, forests and forest products (See subcodes)
7000 Research equipment and technology (Such as remote sensing)

RPA 303. ECONOMICS OF TIMBER PRODUCTION

Timber production efficiency research investigates how income can be increased through effective use of labor and capital. Such information is generally lacking for the wide variety of forestry investments possible in different areas. Returns of expenditures for planting, stand improvement, and other timber growing activities vary widely throughout the nation and depend on many cost factors including the quantity and quality of timber yields, and local market conditions. Identifying the most profitable opportunities for management of public forestry programs and for private investments on forest lands is basic to efficient allocation of the funds available for timber growing.

Areas of research include:

(a) Evaluation of opportunities for profitable timber growing in relation to different combinations of forest types, site, types of ownership, size of holdings and market factors.
(b) Potential returns from investments in different areas in forest protection, road construction, planting, thinning, and other forestry measures.
(c) Capital requirements for development of public and private forestry operations.
(d) Effects of income and local taxation on economics of timber production.
(e) Determine the most efficient combinations of practices for public and private timber production including the effects of public programs and policies.
(f) Economics of timber production on small holdings including private institutional arrangements affecting management.

Exclude: (1) Research on evaluation of public assistance programs. (Use RPA 903).

Classification Guidelines:

Activities:

5300 Management of labor, capital and other inputs
6000 Analysis of supply, demand and price, including interregional competition
6500 Description, inventory and trends
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0600 Trees, forests, and forest products (See subcodes)

RPA 304. IMPROVEMENT OF BIOLOGICAL EFFICIENCY OF FRUIT AND VEGETABLE CROPS

Fruits, vegetables, and edible tree nuts are generally produced on high-value land and involve high capital and labor inputs. It is essential that biological efficiency be optimized in order that cost per unit of production be held down and the needs of the American consumer be met at a reasonable cost. The potential for developing an export market is largely dependent on the competitive price relationship of the crops.

Areas of research include:

(a) The genetic and physiological mechanisms and processes affecting biological efficiency.
(b) Search for germplasm to maintain or improve biological efficiency.
(c) Developing more effective breeding procedures for fruit and vegetable crops.
(d) Developing improved varieties and strains which possess desired levels of biological efficiency along with other desirable attributes.
(e) Developing better procedures for distributing desirable germplasm--either as seed or other propagating materials.
(f) Improving the management and culture of fruits and vegetables including research on cultural practices such as fertilization, plant spacing and population, time of seeding, soil preparation, and water or soil moisture management when the primary orientation is directed to the fruit or vegetable response to the environmental variable (fertilizer, water, soil, spacing, etc.).
(g) Engineering work on instrumentation and equipment for studying the effects of environmental factors on growth and health of crops.

Exclude:
(1) Breeding and selection for resistance to diseases. (Use RPA 205).
(2) Breeding and selection for resistance to insects. (Use RPA 204).
(3) Breeding and selection for resistance to drought and excessive moisture. (Use RPA 105).
(4) Breeding and selection, and management for quality. (Use RPA 402).
(5) Research on plants or cropping sequences to manage or improve saline soils. (Use RPA 103).
(6) Engineering development of commercial scale machinery for control of plant environment. (Use RPA 305).
(7) Research on the interrelationship among soil properties, fertilizers, water, and plants when the primary emphasis is toward these interrelationships and not production of a particular crop, e.g. tomatoes. (Use RPA 102).
(8) Breeding and selection of varieties adapted to mechanization of production. (Use RPA 305).

Classification Guidelines:

Activities:

4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
7500 Development of research equipment and technology

RPA 304. (Continued)

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6200 Seed research
6700 Plants
7000 Research equipment and technology (Such as remote sensing)

RPA 305. MECHANIZATION OF FRUIT AND VEGETABLE CROP PRODUCTION

An overriding consideration in mechanization of fruit, vegetable, and edible tree nut production is the requirement for timeliness in accomplishing the various operations from planting through harvesting and handling the harvested crop because of perishability of the product. Mechanization is needed to increase efficiency and decrease labor requirements in the production of fruit and vegetable crops. Mechanization in fruit and vegetable production is less extensive than that in field crops.

Areas of research include:

(a) Developing principles relative to mechanical and rheological properties of fruits and vegetables as they affect handling operations.
(b) Developing machines and improved machine components to plant, cultivate, harvest, and handle specific crops.
(c) Developing precision devices, such as for planting operations.
(d) Developing tillage units to minimize power requirements and number of operations, and to provide the optimum seed bed conditions.
(e) Automating machine operations.
(f) Breeding and selection of varieties adapted to mechanization of production.
(g) Developing prototype machinery and equipment for control of plant environment.

Exclude: (1) Engineering work on instrumentation for studying the effects of environmental factors on growth and health of crops. (Use RPA 304).
(2) Development of specialized equipment for protection against insects, diseases, weeds, and other hazards. (Use RPA 204, 205, 206, or 214).

Classification Guidelines:

Activities:

5200 Mechanization, improvement of physical efficiency, and development of structures and facilities

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6700 Plants

RPA 306. PRODUCTION MANAGEMENT SYSTEMS FOR FRUITS AND VEGETABLES

Many of the management studies applied to the production of fruits, vegetables, and edible tree nuts in the past have dealt with such economic questions as the most profitable rate of fertilization, comparative net returns from various crops, the economy of hand vs. machine methods, and the relative costs of different machine sizes. Available methods of analysis severely limited the number of alternatives that could be compared. High-speed electronic computers and new analytical models have opened the way to more comprehensive analyses of alternatives. These new analytical tools provide a useful technique to the horticulturist and the engineer in devising or selecting the most effective production system. The joint efforts of the horticulturist, the engineer and the economist will enable them to select the "best" production plan. This plan is made up of a "bundle" or compatible set of choices among alternative crops, production practices, and equipment.

Management systems analysis will include consideration and integration of choices within each of the following:

(a) Crops, crop sequences, and crop varieties;
and
(b) Plant population, moisture management methods, fertilizer and pesticide rates, and time and method of application;
and
(c) Time and labor for performing each operation most effectively;
and
(d) Timeliness of operations permitted by alternative types and sizes of equipment, as well as their relative costs.

Classification Guidelines:

Activities:

5200 Mechanization, improvement of physical efficiency, and development of structures and facilities
5300 Management of labor, capital and other inputs

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6700 Plants

RPA 307. IMPROVEMENT OF BIOLOGICAL EFFICIENCY OF FIELD CROPS

Research to maintain or improve the biological efficiency of field crops is of paramount importance in determining the ability of agriculture to meet the feed, food, and fiber needs of the American people and provide vital amounts of these commodities for export.

Increased biological efficiency can provide the food and fiber needs of an expanding population. Efficient field crop production is basic to an efficient, economic livestock industry.

Areas of research include:

(a) The genetic and biological determinants of biological efficiency.
(b) Identification of superior germplasm and breeding and selection of improved varieties.
(c) Cultural practices including fertilization, plant spacing and population, time of seeding, soil preparation, and water or soil moisture management when the primary orientation is directed to the specific crop, such as corn, and its response to the environmental variable (fertilizer, water, soil, spacing, etc.).
(d) Procedures for multiplication and distribution of superior germplasm (seed or other propagating material).
(e) Methods of adaptation to critical environmental factors including engineering work on instrumentation for studying the effects of environmental factors on growth and health of crops.

Exclude: (1) Breeding and management related to quality improvement. (Use RPA 405).
(2) Research to produce feed crops with a reduced content of toxic components. (Use RPA 405).
(3) Breeding and selection of field crops for disease resistance. (Use RPA 208).
(4) Breeding and selection of field crops for resistance to insects. (Use RPA 207).
(5) Breeding and selection of field crops for drought resistance. (Use RPA 105).
(6) Breeding and selection of field crops for tolerance to salinity and research on plants or cropping sequences to manage or improve saline soils. (Use RPA 103).
(7) Breeding and selection of range forage plants. (Use RPA 112).
(8) Development of machinery and equipment for control of plant environment suitable for commercial adaptation. (Use RPA 308).
(9) Research on the interrelationship among soil properties, fertilizers, water, and plants when the primary emphasis is toward these interrelationships and not production of a particular crop, e.g. corn. (Use RPA 102).
(10) Breeding and selection of varieties adapted to mechanization of production. (Use RPA 308).

Classification Guidelines:

Activities:

4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
7500 Development of research equipment and technology

RPA 307. (Continued)

Commodities, etc.:

1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6200 Seed research
6700 Plants
7000 Research equipment and technology (Such as remote sensing)

RPA 308. MECHANIZATION OF PRODUCTION OF FIELD CROPS

Mechanization research is needed to increase efficiency and decrease labor requirements in the production of field crops. An important consideration in field crop production is the requirement for timeliness in accomplishing certain operations from planting through harvesting and handling the harvested crop. Mechanization in the production of field crops has increased substantially in recent years. A large increase in crop production has been accompanied by a significant decrease in man-hours of labor used. Opportunities for further improvements in mechanization are promising.

Areas of research include:

(a) Improving machine components and developing machines to plant, cultivate, harvest, and handle specific crops.
(b) Developing precision devices and automated systems of machine operations.
(c) Developing tillage units to minimize power requirements and number of operations, and to provide optimum seed bed conditions.
(d) Determining mechanical and rheological properties of crop products to facilitate development of equipment and procedures of handling.
(e) Breeding and selection of varieties and cultural practices to provide plants adapted to mechanized operations.
(f) Engineering development of prototype machinery and equipment for control of plant environment.

Exclude: (1) Engineering work on instrumentation for studying the effects of environmental factors on growth and health of crops. (Use RPA 307).
(2) Development of specialized equipment for protection against insects, diseases, weeds, and other hazards. (Use RPA 207, 208, 209, or 214).

Classification Guidelines:

Activities:

5200 Mechanization, improvement of physical efficiency, and development of structures and facilities

Commodities, etc.:

1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2200 Cottonseed (for meal, oil, etc.)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6700 Plants

RPA 309. PRODUCTION MANAGEMENT SYSTEMS FOR FIELD CROPS

Farm operators must often choose among a number of crops and crop sequences, as well as methods of "systems" to be used in the production of each crop. Much of the economic analysis applied to the production of field crops in the past has dealt with such questions as the economy of hand vs. machine methods, relative costs of different machine sizes, the most profitable rate of fertilization, or the comparative net returns from various crops. Lack of data and available methods of analysis severely limited the number of alternatives that could be compared.

Many new analytical tools provide a useful technique to the agronomist and the engineer in devising or selecting the most effective production system. The joint efforts of the agronomist, the engineer and the economist will enable them to select the "best" production plan. The plan is made up of a "bundle" or compatible set of choices among alternative crops, production practices and equipment.

Management systems analysis will include consideration and integration of choices within each of the following:

(a) Crops, crop sequences, and crop varieties;
and
(b) Fertilizer and pesticide rates, and time and methods of application, plant population, and moisture management;
and
(c) Time and labor available for performing each operation most effectively;
and
(d) Timeliness of operations permitted by alternative types and sizes of equipment, as well as their relative costs.

Classification Guidelines:

Activities:

5000 Improving biological efficiency of plants and animals
5200 Mechanization, improvement of physical efficiency, and development of structures and facilities
5300 Management of labor, capital and other inputs

Commodities, etc.:

1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
6700 Plants

RPA 310. REPRODUCTIVE PERFORMANCE OF LIVESTOCK, POULTRY AND OTHER ANIMALS

Brood animals fail to come in heat, fail to conceive, abort with embroyonic deaths, have stillbirths or lose their offspring in postnatal deaths. Poultrymen have no way of ensuring that all eggs incubated are fertile, nor of hatching all those which are fertile. Attainment of optimum reproductive efficiency could greatly decrease the cost of producing calves, pigs, lambs, chicks, and poults, and other young.

Areas of research include:

(a) Reduce the age of first breeding in females.
(b) Improve libido and reduce physical and psychological barriers to mating.
(c) Develop methods to control estrus.
(d) Improve semen metabolism and preservation, and artificial insemination techniques.
(e) Determine the effects of stress factors on reproductive performance.
(f) Control sex of offspring through sperm separation and other means.
(g) Increase the fertilization and conception rate of available ova.
(h) Increase the number of potentially fertilizable ova, particularly for sheep and cattle.
(i) Reduce prenatal, natal, and postnatal mortality.
(j) Determine the effect of herd management systems, such as time of calving and interval between calves, on reproductive performance.
(k) Develop and improve methods for storing, transplanting, fertilizing and growing ova *in vitro* and *in vivo*.
(l) Improve mothering ability.
(m) Conduct genetic studies to improve reproductive performance.
(n) Develop practical methods for early diagnosis of pregnancy.

Exclude: (1) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).

Classification Guidelines:

Activities:

4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6800 Animals (Vertebrates)

RPA 311. IMPROVEMENT OF BIOLOGICAL EFFICIENCY IN PRODUCTION OF LIVESTOCK, POULTRY AND OTHER ANIMALS

In the last 20 years broiler feed efficiency increased 40 percent, and further gains are possible. Similar gains in feed efficiency have not been made in the other classes of livestock. Attainment of greater productive efficiency requires employment of genetic, nutrition, and physiology research.

Areas of research include:

(a) Digestion and metabolism.
(b) Nutrient requirements for specific life processes and longevity.
(c) Hormonal and nutritional interactions for maintenance and growth.
(d) Genetic studies designed to evaluate the importance of heredity in the production of animal products, e.g. heritability, genetic correlations, methods of selection, mating systems.
(e) Breeding and selection of improved strains.
(f) Composition and biological availability of nutrients.
(g) Effects of processing and feeding system variables on nutritive values of feed.
(h) Alternate sources of nutrients, including forages.
(i) Management of breeding stocks.

Exclude: (1) Research on reproductive performance. (Use RPA 310).
(2) Research on environmental stress. (Use RPA 312).
(3) Research on reduction of waste carcass fat and proportion of low meat yield cuts. (Use RPA 409).
(4) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).

Classification Guidelines:

Activities:

4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
7500 Development of research equipment and technology

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6800 Animals (Vertebrates)
7000 Research equipment and technology (Such as remote sensing)

RPA 312. ENVIRONMENTAL STRESS IN PRODUCTION OF LIVESTOCK, POULTRY AND OTHER ANIMALS

In spite of a heavy investment in farm buildings for livestock, stresses from the effects of climate, handling, and other environmental factors decrease productivity substantially. Extremes in temperature, humidity, air movement, and noise may lead to poor feed efficiency, throw animals off feed, reduce resistance to disease, and even cause death losses.

Areas of research include:

(a) Environmental factors which reduce productivity.
(b) Genetic adaptability to extreme environments and breeding and selection for tolerance.
(c) Facilities and equipment that reduce environmental stress.
(d) Management systems that enable animals to adapt to stress conditions.
(e) Physiological and behavioral responses of animals to various environmental conditions.

Exclude: (1) Research on effects of stress factors on reproductive performance. (Use RPA 310).
(2) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).

Classification Guidelines:

Activities:

4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
4890 Protection against radiation, noise and other hazards
4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6800 Animals (Vertebrates)

RPA 313. PRODUCTION MANAGEMENT SYSTEMS FOR LIVESTOCK, POULTRY AND OTHER ANIMALS

Animal producers are faced with a wide variety of production alternatives. Lack o data and limitations of available methods of analysis have severely limited the numbe of alternatives that could be adequately evaluated. High speed electronic computer and newer analytical methods and models have opened the way to more comprehensiv analyses of alternatives. The joint efforts of the scientist, the engineer and th economist will enable them to select the "best" production plan. The plan is made u of a "bundle" or compatible set of choices among alternative production practices an equipment.

These new analytical tools provide a useful technique to the scientist and the engi neer in devising or selecting the most effective production system.

Management systems analysis will include consideration and integration of choice within each of the following:

(a) Production or purchase of a particular feed;
and
(b) Stocking rates, grazing systems, breeding systems and other practices;
and
(c) Kinds of livestock, breeds and strains;
and
(d) Labor versus mechanization alternatives.

Exclude: (1) Research on fish, shellfish, game and fur-bearing animals and othe animals (C-0800). (Use RPA 904).

Classification Guidelines:

5200 Mechanization, improvement of physical efficiency, and development o structures and facilities
5300 Management of labor, capital and other inputs

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6800 Animals (Vertebrates)

RPA 314. BEES AND OTHER POLLINATING INSECTS

Pollinating insects and honey represent a small but highly significant segment of the agricultural economy. Sale of honey, beeswax, package bees and queens, and rental of colonies to seed producers are important items of farm income. The value of pollinators is very great. There are at least 50 agricultural crops that would fail to produce a commercial crop of fruit or seed if pollinating insects were not present to insure pollination. All research on bees is included under this RPA.

Areas of research include:

(a) Nutritional substitutes to maintain strong colonies.
(b) Strains of honey bees for maximum efficiency in the pollination of different crops.
(c) Strains resistant to American and European foulbrood, nosema and other diseases.
(d) Nonswarming strains.
(e) Improved systems of extracting, filtering, and packaging honey.
(f) Improved methods of protecting combs from wax moths.
(g) Diagnostic techniques to identify the kinds of plants from which the honey was produced.
(h) New and improved food products containing honey.
(i) Methods of protecting bees from the harmful effects of pesticides.
(j) Evaluation of the medicinal and therapeutic value of honey and of bee venom.
(k) Identification, assessment of the value, and studies to improve other pollinating insects through selection, breeding and management.
(l) Improved equipment and methods for reducing labor in handling and transporting bee colonies.
(m) Relevant marketing activities.

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4810-6390 (See Activity Classification - Table B)

Commodities, etc.:

3500 Bees and honey and other pollinating insects

RPA 315. IMPROVEMENT OF STRUCTURES, FACILITIES, AND GENERAL PURPOSE FARM SUPPLIES AND EQUIPMENT

Research on farm supplies, equipment and buildings is needed to lower production costs in agriculture and prices paid by farmers for purchased production inputs. Since the early 1950's, prices received by farmers for their products have shown a generally downward trend, while prices paid for production inputs have continued to increase. Moreover, purchased inputs made up an increasing proportion of total inputs used in farm production.

Areas of research include:

(a) Physical, chemical and biological aspects of the production of fertilizers, pesticides, feed constituents and hormones.
(b) Engineering aspects of design and development of structures, building materials and facilities.
(c) Engineering aspects of the design and development of general purpose machinery, equipment and tools for production, materials handling, and warehousing of farm production inputs.
(d) The physical, chemical and biological behavior, including effects on containers, machinery, and buildings of farm inputs in production and market channels.
(e) Studies on the properties of materials.

Exclude: (1) Research related to safe handling and use of materials and equipment. (Use RPA 709).

Classification Guidelines:

Activities:

5200 Mechanization, improvement of physical efficiency, and development of structures and facilities
5600 Chemical and physical properties of non-food products

Commodities, etc.

3600 General purpose supplies (including machinery, equipment, fertilizers, feedstuffs, and pesticides)
3900 Structures and facilities (See subcodes)
6700 Plants
6800 Animals (Vertebrates)

RPA 316. FARM BUSINESS MANAGEMENT

Farm business management research is needed to help farm operators adjust to technological, economic, institutional, and social changes which occur continuously. Purchased inputs are increasingly being substituted for scarcer and more costly labor and land in production. New technology changes the competitive position of alternative production methods. New ways of doing business with suppliers and marketing firms require new types of decisions of the farm operator, and open up new sources of financing to him. Changing market demands require adjustments in the type of product produced.

Areas of research include:

(a) Size and enterprise combination of the farm business (what and how much to produce).
(b) Relative advantages of alternatives, such as purchasing or renting land and individual or joint ownership of machinery vs. hiring custom machines.
(c) Sound financial management in the use of credit, what insurance to carry, the maintenance of nonfarm financial reserves, and the use of vertical coordination arrangements.
(d) Analyses of where, how, and when to sell farm products and buy production inputs.
(e) Analysis of managerial ability as it relates to the quality of decision making and the efficiency of the farm operation.
(f) Impact of public policy and regulation on farm business management.

Classification Guidelines:

Activities:

5300 Management of labor, capital and other inputs
7300 Evaluation of public programs, policies and services

Commodities, etc.:

4200 The farm as a business enterprise

RPA 317. MECHANIZATION AND STRUCTURES USED IN PRODUCTION OF LIVESTOCK, POULTRY AND OTHER ANIMALS

Many new mechanization problems and opportunities have arisen as a result of increasing numbers of animals in a single enterprise coupled with the decreasing availability of labor. There is need and justification to devise ways to reduce drudgery and manual effort in animal production. Such problems include the handling of feed and forage, milk, and wastes.

Research is needed not only for beef, sheep, dairy, swine, and poultry but also for pets, laboratory animals, goats, and horses.

Areas of research include:

(a) Methods, facilities, and equipment for farm handling, processing and storing inputs such as feeds, forage and bedding.
(b) Methods, facilities, and equipment for animal waste collection and removal from barns and feedlots.
(c) Milking and milk handling methods.
(d) Equipment, structures, facilities and methods for housing and handling animals.
(e) Egg collection and handling.

Exclude: (1) Research on fish, shellfish, game and fur-bearing animals and other wildlife (C-0800). (Use RPA 904).
(2) Research on waste disposal, including possible salvage. (Use RPA 901).
(3) Development of specialized equipment for protection against insects, internal and external parasites, diseases, and other hazards. (Use RPA 210, 211, 212, 213, or 214).

Classification Guidelines:

Activities:

5200 Mechanization, improvement of physical efficiency, and development of structures and facilities

Commodities, etc.:

2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
3600 General purpose supplies (including machinery, equipment, fertilizers, feedstuffs, and pesticides)
3900 Structures and facilities (See subcodes)
6800 Animals (Vertebrates)

RPA 318. NON-COMMODITY-ORIENTED BIOLOGICAL TECHNOLOGY AND BIOMETRY

The better understanding of cell systems, experimental design, and other improvements in general science technology make a significant contribution to other, more specific, research on individual plants and animals. While such research may use one of the commodities as an experimental tool, it is not commodity oriented.

Research on experimental designs and statistical analyses; purification of RNA and DNA and of structures such as ribosomes, mitochondria, and endoplasmic reticula; and elucidation of metabolic pathways and biochemical reactions involved in energy transfer, growth, synthesis, and breakdown of organic compounds are examples.

Areas of research include:

(a) Design of experiments and statistical analysis of data.
(b) Pathways in plant and animal metabolism.
(c) Genetic studies with yeast, Neurospora, mice, Drosophila, etc., solely for elucidation of genetic principles.
(d) Whole cell biology studies of algae, bacteria, yeasts, molds, phages, viruses, protozoans.
(e) Studies on weeds, not commodity oriented.
(f) Seed research, not commodity oriented.
(g) Insect, tick and mite research, not commodity oriented.
(h) Plant growth responses, not commodity oriented.

Exclude: (1) All research which can be identified under one or more of the other RPAs. (Use appropriate RPA).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4700 Protection against weeds and their control agents
4900 Biology of plants and animals
5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5600 Chemical and physical properties of non-food products
7000 Design of experiments and methods of statistical analysis
7500 Development of research equipment and technology

Commodites, etc.:

0600 Trees, forests, and forest products (See subcodes)
3800 Food
6100 Weeds*
6200 Seed research*
6300 Biological cell systems
6400 Experimental design and statistical methods
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)*
6600 Microorganisms, viruses, etc.*
6700 Plants*
6800 Animals (Vertebrates)*
7000 Research equipment and technology (Such as remote sensing)

* Use only when the specific commodities affected cannot be identified or when the research is applicable to a broad range of commodities.

GOAL IV

EXPAND THE DEMAND FOR FARM AND FOREST PRODUCTS BY DEVELOPING NEW AND IMPROVED PRODUCTS AND PROCESSES AND ENHANCING PRODUCT QUALITY

Increasing domestic demand and improving markets abroad depend upon satisfying consumer preferences for high quality food, fiber, and forest products. This means tailoring products to meet consumer desires. More effort should be given to producing products with characteristics that meet consumer or processor needs and maintaining these qualities to point of use. New and improved uses and processes will result in more variety, reduced costs, and increased utilization of farm and forest products.

RPA's 401-412, inclusive.

RPA 401. NEW AND IMPROVED FOREST PRODUCTS

The objectives of forest products research are to develop (1) lower cost products with greater desirability, serviceability, and performance, and (2) greater use of low-quality timber, little-used species, and materials now remaining as waste.

There is a continuing decline in quality of available timber because of the lack of adequate replacements for the larger and better quality trees. Demand for timber products is expected to go up 80 percent by the year 2000. Research is needed to develop ways to convert more low-grade material into useful products. Where such timber is abundant it may be possible to establish new industries and enhance economic growth. Improved wood utilization also provides a profitable means for upgrading residual stands. Removal and use of low-quality timber frees space for better growing stock.

Areas of research include:

(a) Anatomical, mechanical, physical and chemical properties of wood and its components, and performance in use.
(b) Effects of environmental factors such as heat, light, and moisture on wood, wood products, and other forest products in use.
(c) Relation of timber species, grades, and quality to wood properties and use.
(d) More efficient design of wood members for structural purposes.
(e) Better ways to use wood in panels, laminates, and assemblies.
(f) New and improved processes for production of chemicals and other products; including those from bark and wood extractives.
(g) Improved products and reduction of waste through development of more effective manufacturing processes such as sawing, drying, machining, pulping and assembling.
(h) Effect of fungi and insects on wood and treatments to impart resistance.
(i) Methods for removing moisture from wood and for stabilizing its dimensions and shape.
(j) Methods for improving fire resistance of wood products.
(k) New and improved products from wood resins, naval stores, and maple sap.

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4870 Protection against molds, fungi and other spoilage organisms
5410 Chemical and physical properties of food (e.g. maple)
5420 Biochemical and chemical reactions in food (e.g. maple)
5430 Sensory properties of food (e.g. maple)
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction) (e.g. maple)
5520 Food bioprocesses (enzyme and microbial applications) (e.g. maple)
5530 Food chemical processes (salt, sugar, acid) (e.g. maple)
5540 Food processing efficiencies (management of energy, water, wastes) (e.g. maple)
5550 Food product handling, packaging, and storage (e.g. maple)
5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
6310 Nutrient composition of food (e.g. maple)
6330 Food fortification, enrichment and improvement (e.g. maple)
6390 Eating quality of food (e.g. maple)

RPA 401. (Continued)

Commodities, etc.:

0600 Trees, forests and forest products (See subcodes)
3900 Structures and facilities (See subcodes)

RPA 402. PRODUCTION OF FRUIT AND VEGETABLE CROPS WITH IMPROVED ACCEPTABILITY

When consumers buy fruits, vegetables, and edible tree nuts in the market, they look for external characteristics that appeal to them. At home they expect these products, whether fresh, frozen, or processed, to have eating qualities they like. Such qualities must be inherent in the products farmers produce. Fruits and vegetables are expected to withstand the rigors of mechanical harvesting and of shipment; have superior color, flavor, texture, nutritive value; retain good quality through processing and storage; and meet requirements for specific food purposes such as potatoes for baking, frying or chipping.

Areas of research include:

(a) Enhancement of quality attributes desired by consumers and processors.
(b) Discovery of the genetic, chemical, and physiological determinants of preferred attributes and the relationships among them.
(c) Breeding and selecting new and improved varieties that have favored quality characteristics.
(d) Development of improved production practices to achieve optimum quality of product harvested.

Classification Guidelines:

Activities:

4900 Biology of plants and animals
5100 Increasing consumer acceptability of farm and forest products
5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage
5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
5800 Identification, measurement and maintenance of quality
7500 Development of research equipment and technology

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3800 Food (not readily associated with specific fruits and vegetables)
6200 Seed research
6700 Plants
7000 Research equipment and technology (Such as remote sensing)

RPA 403. NEW AND IMPROVED FRUIT AND VEGETABLE PRODUCTS AND BY-PRODUCTS

Product development and processing research can provide better fruit, vegetable, and edible tree nut products. Product research can make available new and more attractive products tailored to the requirements of specific domestic markets.

New food products may reduce preparation time and effort and may reduce costs to the consumer. New food products and methods of processing can achieve economies in storage and transportation.

Areas of research include:

(a) Identification of the chemical constituents of each product that determine its color, flavor, texture, and nutritive value.
(b) Techniques for stabilization through freezing, sterilization, dehydration, or combinations of these.
(c) Fortification to increase the nutritional value of foods.
(d) Development of new or improved products and improved processing techniques to maintain or improve the stability and nutritional value of foods.
(e) Chemical and biochemical reactions which occur among the constituents of the product and the factors which determine their rates of reaction.

Exclude: (1) Research on product development for foreign markets. (Use RPA 604).

Classification Guidelines:

Activities:

5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage
5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
5800 Identification, measurement and maintenance of quality
6310 Nutrient composition of food
6330 Food fortification, enrichment and improvement
6390 Eating quality of food

Commodities, etc.:

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3800 Food (not readily associated with specific fruits and vegetables)
6700 Plants

RPA 404. QUALITY MAINTENANCE IN STORING AND MARKETING FRUITS AND VEGETABLES

Many of the desirable quality characteristics that fruits, vegetables, and edible tree nuts possess when they leave the farm may be lost by the time they are purchased by the consumer. Inroads of molds and other microorganisms, insects, moisture, and unfavorable temperatures, result in quality deterioration and also make a portion of the produce unsalable. Some of the serious losses in end use quality occur as a result of chemical, physical and physiological changes during transportation and storage. Prevention of such losses will give consumers a more attractive product and will eliminate the costs involved in discarding unsalable merchandise. Maintenance of quality in storage and distribution, whether on or off the farm, is included.

Areas of research include:

(a) Characterization of the biochemical reactions that occur after harvest and determination of the enzyme systems involved.
(b) Search for effective ways to reduce physiological deterioration and losses due to microorganisms and insects in market channels.
(c) Investigation of the effects and means of controlling temperature, humidity, and other atmospheric variables in storage and transportation.
(d) Systems of storage and handling conducive to the development or retention of desired color, flavor, texture and nutritive value.
(e) Packaging and other types of protection needed to maintain conditions necessary to maintain or develop quality.

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4860 Protection against rodents and other mammals
4870 Protection against molds, fungi and other spoilage organisms
4890 Protection against radiation, noise and other hazards
5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5550 Food product handling, packaging, and storage
5600 Chemical and physical properties of non-food products
5800 Identification, measurement and maintenance of quality
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6310 Nutrient composition of food
6330 Food fortification, enrichment and improvement
6390 Eating quality of food

Commodities, etc.

0900 Citrus and subtropical fruit (See subcodes)
1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1100 Potatoes
1200 Vegetables (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3800 Food (not readily associated with specific fruits and vegetables)
6700 Plants

RPA 405. PRODUCTION OF FIELD CROPS WITH IMPROVED ACCEPTABILITY

Acceptability of field crops means acceptability of such crops, or portions thereof, for particular uses. These include food, fiber, and feed use. Concern must be directed to domestic and foreign preferences if the full market potential of field crops is to be realized.

Areas of research include:

(a) Enhancing product attributes that influence acceptability by animals, processors, or consumers.
(b) Determining the physical, chemical, and genetic bases of determinants of preferred qualities.
(c) Breeding and selecting new and improved varieties of field crops that have favored characteristics including reduced contents of naturally occurring toxins.
(d) Developing improved production practices to achieve optimum quality of product.

Classification Guidelines:

Activities:

4900 Biology of plants and animals
5000 Improving biological efficiency of plants and animals
5100 Increasing consumer acceptability of farm and forest products
5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage
5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
5800 Identification, measurement and maintenance of quality
7500 Development of research equipment and technology

Commodities, etc.:

1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2200 Cottonseed (for meal, oil, etc.)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3800 Food (not readily associated with specific field crops)
6200 Seed research
6700 Plants
7000 Research equipment and technology (Such as remote sensing)

RPA 406. NEW AND IMPROVED FOOD PRODUCTS FROM FIELD CROPS

New or improved food products and processes can provide better foods from field crops. They can make available new and more attractive products tailored to the requirements of specific domestic markets.

Areas of research include:

(a) The chemistry of color, flavor, texture, and nutritive value.
(b) The chemical and biochemical reactions which occur among constituents of foods and the factors which determine their rates.
(c) Improvement of edible oils through removal or inactivation of constituents responsible for adverse quality effects.
(d) Fortification to increase the nutritional value of foods.
(e) Development of products and processing techniques to maintain or improve the stability and nutritional value of foods.

Exclude: (1) Research on new and improved maple products. (Use RPA 401).
(2) Research on new and improved feed, textile and industrial products from field crops. (Use RPA 407).
(3) Research on product development for foreign markets. (Use RPA 604).

Classification Guidelines:

Activities:

5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage
5800 Identification, measurement and maintenance of quality
6310 Nutrient composition of food
6330 Food fortification, enrichment and improvement
6390 Eating quality of food

Commodities, etc.

1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2200 Cottonseed (for meal, oil, etc.)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3800 Food (not readily associated with specific field crops)
6700 Plants

RPA 407. NEW AND IMPROVED FEED, TEXTILE, AND INDUSTRIAL PRODUCTS FROM FIELD CROPS

Increasing the potential of our agricultural land requires full utilization of its products. Industrial uses have traditionally absorbed significant quantities of grains and oilseeds in such consumer products as paper, textiles, adhesives and paints. With more sophisticated processing, these crops could be converted to a great variety of non-food uses.

Agricultural products such as cotton, starch, and oils have been challenged in the market place by non-agricultural products. To retain and expand markets, agricultural raw materials may need to be modified chemically and/or physically to provide desired properties at competitive prices. New end use opportunities include plastics, adhesives, plasticizers, lubricants, drugs, feed additives, and paper sizes and additives. The feed value of oilseed meals and of processed forages can be improved and costs of their processing and distribution reduced.

Areas of research include:

(a) Chemical and physical properties of constituents of field crops.
(b) Preparation of chemical derivatives.
(c) Adaptation of derivatives for use in industrial products.
(d) Development of improved engineering and processing methods.
(e) Pharmacology of constituents and derivatives.
(f) Modifications and treatments to improve textile characteristics such as flame resistance.
(g) Chemical reactions that constitutents undergo under conditions such as those encountered in feed processing.

Exclude: (1) Research on protection of feed supplies from harmful microorganisms, and processing to reduce or inactivate naturally occurring toxins in feeds. (Use RPA 702)

Classification Guidelines:

Activities:

5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
5800 Identification, measurement and maintenance of quality

Commodities, etc.:

1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2200 Cottonseed (for meal, oil, etc.)
2300 Soybeans
2400 Peanuts
2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3700 Clothing and textiles
6700 Plants

RPA 408. QUALITY MAINTENANCE IN STORING AND MARKETING FIELD CROPS

Maintenance of quality of field crop commodities against the inroads of insects, molds, moisture, chemical changes, and other quality deteriorating factors is important to minimize costs in storage and distribution. This RPA includes maintaining quality of farm products in storage and distribution channels, whether on or off the farm.

Areas of research include:

(a) Search for effective ways to reduce physiological deterioration and losses due to insects, molds, rodents and other pests.
(b) Determining the effects and developing ways to control temperature, humidity, atmosphere in storage and transportation.
(c) Containerization needed to maintain optimum conditions.
(d) Biochemical reactions that occur in products after harvest.
(e) Determination of the relationship among variables of handling, storage and crop conditioning and loss in quality.

Exclude: (1) Research on prevention, reduction or elimination of harmful micro-organisms, mycotoxins and other naturally occurring toxins in field crops. (Use RPA 702).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4860 Protection against rodents and other mammals
4870 Protection against molds, fungi and other spoilage organisms
4890 Protection against radiation, noise and other hazards
5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5550 Food product handling, packaging, and storage
5600 Chemical and physical properties of non-food products
5800 Identification, measurement and maintenance of quality
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6310 Nutrient composition of food
6330 Food fortification, enrichment and improvement
6390 Eating quality of food

Commodities, etc.:

1400 Corn (including popcorn, for sweetcorn see 1280)
1500 Grain sorghum
1600 Rice
1700 Wheat (See subcodes)
1800 Other small grains (See subcodes)
1900 Pasture
2000 Forage crops (See subcodes)
2100 Cotton (including cottonseed for planting purposes) (See subcodes)
2200 Cottonseed (for meal, oil, etc.)
2300 Soybeans
2400 Peanuts

RPA 408. (Continued)

Commodities, etc.:

2500 Other oilseed and oil crops (excluding cottonseed) (See subcodes)
2600 Tobacco (See subcodes)
2700 Sugar crops (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3800 Food (not readily associated with specific field crops)
6200 Seed research
6700 Plants

RPA 409. PRODUCTION OF ANIMAL PRODUCTS WITH IMPROVED ACCEPTABILITY

Acceptability of animal products varies widely among species and products. We should know why. Concern over the role of fat in the diet has focused attention on the problem of excess fat in beef, pork and lamb. Consumption trends for milk and eggs point toward acceptance problems for these products. More information is needed concerning what livestock product qualities are desired by consumers. Production should be tailored to these preferences.

Areas of research include:

(a) Physiology and biochemistry of fats, proteins, and flavor components.
(b) Influence of breeding, feeding, and management practices on quality of animal products.
(c) Improving the acceptability of animal products through breeding, feeding, and management.
(d) Factors responsible for development of flavor.
(e) Reduction in amount of undesired fat in animal products.
(f) Improve wool, hides, and other non-food animal products.

Exclude: (1) Research on bees and honey. (Use RPA 314).

Classification Guidelines:

Activities:

4900 Biology of plants and animals
5100 Increasing consumer acceptability of farm and forest products
5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction).
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage
5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
5800 Identification, measurement and maintenance of quality
7500 Development of research equipment and technology

Commodities, etc.:

0800 Fish, shellfish, game and fur-bearing animals and other wildlife and their habitats (See subcodes)
2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
3800 Food (not readily associated with specific animal products)
6800 Animals (Vertebrates)

RPA 410. NEW AND IMPROVED MEAT, MILK, EGGS, AND OTHER ANIMAL FOOD PRODUCTS

The development of new and improved meat, milk, eggs, and other animal food products and processing may reduce costs, increase variety and expand markets for these foods. Some products can also be tailored to simplify home storage, reduce time required for preparation, and, in case of meats, develop more attractive products from low-value or low quality cuts. Other products can be developed for special uses and to minimize weight.

Areas of research include:

(a) Improved techniques for stabilization through freezing, sterilization, dehydration, or combinations of these.
(b) New or improved products through fortification and better formulation.
(c) Development or improvement of engineering and processing methods to maintain or improve the stability and nutritional value of foods.
(d) Methods of decreasing product weight and bulk to reduce storage, transportation and distribution costs.
(e) Chemistry and color, flavor, texture and nutritive value.
(f) Chemical and biochemical reactions which occur among the constituents and the factors which determine their rates.
(g) Development of food concentrates from fish.

Exclude: (1) Research on bees and honey. (Use RPA 314).
(2) Research on product development for foreign markets. (Use RPA 604).

Classification Guidelines:

Activities:

5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage
5800 Identification, measurement and maintenance of quality
6310 Nutrient composition of food
6330 Food fortification, enrichment and improvement
6390 Eating quality of food
7500 Development of research equipment and technology

Commodities, etc.:

0800 Fish, shellfish, game and fur-bearing animals and other wildlife and their habitats (See subcodes)
2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
3800 Food (not readily associated with specific animal products)
6800 Animals (Vertebrates)
7000 Research equipment and technology (Such as remote sensing)

RPA 411. NEW AND IMPROVED NON-FOOD ANIMAL PRODUCTS

Animal byproducts have traditionally contributed significantly to our livestoc economy as raw materials for the textile, leather, soap, feed, pharmaceutical, an other industries. In more recent times, industrial research has developed from alter native raw materials, mostly petrochemical, new products having attractive propertie for some of these end uses. These synthetic fibers, detergents and shoe-making mater ials have become highly competitive with farm products. Agricultural raw material have many useful properties frequently not possessed by the synthetics. New tech nology promises to add other desired properties such as permanent press in wool, an biodegradability in detergents from fats. Research has also developed useful ne plasticizers and surface coatings from agricultural products.

Areas of research include:

(a) Chemical and physical properties of hides, wool, skins, and animal fats.
(b) Engineering in the processing of new and improved products.
(c) Reduction of product wastage in processing.
(d) Methods of processing or treating wool to increase its use and furnish propertie desired by consumers.
(e) Cross-bonding agents and improved tanning processes to develop new uses fo leather, sheepskins, and shearling skins.
(f) Development of polymers, detergents, lubricants and chemical intermediates fro animal fats.
(g) Development of feed concentrates from fish.

Classification Guidelines:

Activities:

5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
5800 Identification, measurement and maintenance of quality

Commodities, etc.:

0800 Fish, shellfish, game and fur-bearing animals and other wildlife and thei habitats (See subcodes)
2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
6800 Animals (Vertebrates)

RPA 412. QUALITY MAINTENANCE IN MARKETING ANIMAL PRODUCTS

Maintenance of quality in storage and transport of perishable livestock products and protection against the inroads of spoilage microorganisms, insects, moisture, and deleterious chemical, physical and physiological changes is important.

Areas of research include:

(a) Biochemical changes during storage.
(b) Determining the effects and developing ways to control temperature, humidity, and atmosphere in storage and transportation.
(c) Development of containerization to maintain optimum conditions.
(d) Search for effective ways to control physiological changes in color, flavor, texture and nutritive value and reduce losses due to microorganisms and insects.

Exclude: (1) Research on prevention, reduction or elimination of harmful microorganisms, mycotoxins, and other naturally occurring toxins in animal products. (Use RPA 702).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4860 Protection against rodents and other mammals
4870 Protection against molds, fungi and other spoilage organisms
4890 Protection against radiation, noise and other hazards
5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5550 Food product handling, packaging, and storage
5600 Chemical and physical properties of non-food products
5800 Identification, measurement and maintenance of quality
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6310 Nutrient composition of food
6330 Food fortification, enrichment and improvement
6390 Eating quality of food

Commodities, etc.:

0800 Fish, shellfish game and fur-bearing animals and other wildlife and their habitats (See subcodes)
2900 Poultry (See subcodes)
3000 Beef cattle
3100 Dairy cattle (See subcodes)
3200 Swine
3300 Sheep and wool
3400 Other animals (See subcodes)
3800 Food (not readily associated with specific animal products)
6800 Animals (Vertebrates)

GOAL V

IMPROVE EFFICIENCY IN THE MARKETING SYSTEM

The larger share of the consumer dollar is being spent for marketing rather than producing farm and forest products. The potential is great for reducing marketing costs. Greater efficiency of assembling, handling, processing, packaging, storing, transporting, wholesaling and retailing farm and forest products would reduce prices paid by consumers, increase returns to farmers and marketers, and expand markets.

RPA's 501-503, 506-513, inclusive.

RPA 501. IMPROVEMENT OF GRADES AND STANDARDS - CROP AND ANIMAL PRODUCTS

Grades and standards are designed to describe characteristics of a product which affect its value to users. They are necessary either because the buyer or seller cannot appraise these characteristics by inspection or because buyers and sellers wish to execute sales on the basis of product description without inspection. Thus, effective grades and standards assist buyers in obtaining product characteristics they desire and sellers in obtaining appropriate compensation for what they sell. Costs of buying and selling are greatly reduced when, because of grades and standards, a buyer does not need to personally inspect each lot which he purchases.

The usefulness of market information, important in the conduct of trade and establishment of a fair price, is dependent upon adequately descriptive grades and standards. Many current grades and standards are not as useful as they could be because they do not adequately cover the characteristics desired by users. Others could be improved by the substitution of objective measurement of characteristics for the subjective techniques now in use.

Areas of research include:

(a) Quality characteristics desired by buyers, including processors and handlers as well as consumers.
(b) Finding easily measurable characteristics that can be used to distinguish levels of quality found in products.
(c) Developing objective measures of quality to replace subjective ones.
(d) Developing procedures to update grades and standards to realistically reflect production practices.
(e) Determining the need for and developing grades and standards for products not now covered.
(f) Evaluating the effectiveness of particular grades and standards in meeting the requirements of buyers and sellers.

Exclude: (1) All research relating to grades and standards for ornamentals and turf. (Use RPA 906).
(2) All research relating to grades and standards for bees and other pollinating insects and their products. (Use RPA 314).

Classification Guidelines:

Activities:

5800 Identification, measurement and maintenance of quality

Commodities, etc.:

0800-1200, 1400-3400, 3600, 3800, 6200 (See Commodity Classification - Table C)
6700 Plants
6800 Animals (Vertebrates)

RPA 502. DEVELOPMENT OF MARKETS AND EFFICIENT MARKETING OF TIMBER AND RELATED PRODUCTS

Development of markets and efficient marketing of timber and related products may help to maintain the incomes and employment associated with the timber industry. Non-wood products have penetrated many traditional markets for wood materials in construction, manufacturing, shipping, and other uses. Research to evaluate opportunities for market expansion through more efficient processing and marketing of timber products is essential to maintain and improve the competitive position of wood, and wood and timber related products.

Areas of research include:

(a) Analysis of performance requirements for various wood products in construction and other markets.
(b) Determining consumer attitudes and preference for various wood materials and relationships to performance requirements.
(c) Changes in processing and distribution practices that would lead to increased marketing efficiency and lower costs.
(d) Appraisals of the economic feasibility of developing markets for underused or low-quality timber.
(e) Cost reductions through improved organization and management of marketing and processing firms.
(f) Relationships involved in the size of marketing firms, number and composition of products handled, and marketing and processing costs.
(g) Effects on marketing and processing costs and user demand of such characteristics of raw material supply as quality, dependability, and availability within an economic distance.
(h) Marketing development and marketing efficiency for forest products other than timber including naval stores, maple syrup, chemicals derived from trees, Christmas trees, etc.

Classification Guidelines:

Activities:

5800 Identification, measurement and maintenance of quality
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6000 Analysis of supply, demand and price, including interregional competition
6100 Developing domestic markets, including consumer preference and behavior

Commodities, etc.:

0600 Trees, forests and forest products (See subcodes)

RPA 503. EFFICIENCY IN MARKETING AGRICULTURAL PRODUCTS AND PRODUCTION INPUTS

The farm supply, processing, and marketing sectors account for a large percentage of the retail value of food and fiber. Thus, there are large potential returns from research to improve the efficiency of these sectors of the agricultural industry. Use of out-dated, inefficient marketing facilities, equipment, and methods contributes to the cost of supplying production inputs and moving food and fiber products from the farm to consumers. Research can identify and develop ways to reduce these costs. As consumers continue to demand more marketing services, the importance of efficiency in marketing will become even greater.

Areas of research include:

(a) Determining the effects of marketing facility layout, equipment, and methods on handling costs, and developing the types of facilities and combinations of facilities that will move production inputs to the farm and farm products from farms to consumers most efficiently.
(b) Evaluating and designing transportation equipment and handling methods to reduce losses and handling costs.
(c) Effects of characteristics of raw products such as quality, stability and physical characteristics on marketing and processing costs.
(d) Routing products from producers to consumers in such a way as to minimize transportation and processing costs.
(e) Optimum size and location of facilities for specified levels of output.
(f) Improved techniques for managerial decision making and communications within the firm.

Classification Guidelines:

Activities:

5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions

Commodities, etc.:

0100 Soil and land
0900-1200, 1400-3400, 3600-3900, 4400, 4600-4800 (See Commodity Classification - Table C)
6200 Seed research
6700 Plants
6800 Animals (Vertebrates)

RPA 506. SUPPLY, DEMAND, AND PRICE ANALYSIS - CROP AND ANIMAL PRODUCTS

Reliable forecasts of supply, demand, and prices of farm products are essential to efficient and orderly marketing. Individual producers, processing and marketing firms, and end users base daily decisions upon information about and forecasts of future supply, demand, and price conditions. Sound public policy decisions on acreage control, surplus diversion, and food assistance to developing countries are dependent upon such information. The farm supply industries need similar data on goods and services purchased by producers so that they may make orderly adjustments to prospective changes in supply, demand, and price of production inputs.

Some large firms employ staffs to carry out sophisticated analyses of the many interrelated factors that must be considered in forecasting supply, demand, and price. Small firms, most farmers, and consumers do not have the resources for such analyses. Their bargaining power would be greatly reduced if information from public sources were not available to them.

Areas of research include:

(a) Effects of changes in supply of individual commodities on farm product prices, marketing spreads, and consumer prices.
(b) Effects of changes in supply of one commodity on prices and spreads for substitute and complementary products.
(c) Effects of income, level of education, type of residence, and other consumer characteristics on demand.
(d) Effects of such characteristics of supply as variability of production on user demand.
(e) Seasonal patterns of consumer demand and effects of special events such as religious and national holidays and unusual supply and demand patterns as a result of weather extremes.
(f) Effects of new production and processing technology and of technological developments in production of synthetics on demand for farm products.
(g) Development of improved techniques for collecting consumption data for use in long-range projections of demands.

Classification Guidelines:

Activities:

6000 Analysis of supply, demand and price, including interregional competition
7300 Evaluation of public programs, policies and services
7400 Improvement of agricultural statistics

Commodities, etc.:

0800-1200, 1400-3400, 3600-3800 (See Commodity Classification - Table C)
4400 Agricultural economy of United States and sectors thereof, including interrelationships with the total economy
6200 Seed research
6700 Plants
6800 Animals (Vertebrates)

RPA 507. COMPETITIVE INTERRELATIONSHIPS IN AGRICULTURE

Competitive interrelationships in agriculture change with the development of new technology, shifts in consumer tastes, and organizational changes in the farm supply, production and marketing sectors. An understanding of the changing competitive position of regions and industry groups is necessary for sound management decisions, particularly long-term investment decisions by farm operators and managers of agriculture related firms. The development of sound public agricultural policy requires estimates of its probable impact on the competitive position of farmers in different regions.

Areas of research include:

(a) The competitive position of different regions and industry groups in the production and marketing on agricultural products.
(b) The potential impact of changes in transportation costs, wage rates, technology, rates of population growth and other factors on the competitive position of the various regions producing or handling crop and livestock products.
(c) The potential for a product to compete with other farm products for the use of the land, labor and other production resources in a geographic area.

Classification Guidelines:

Activities:

6000 Analysis of supply, demand and price, including interregional competition
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0900-1200, 1400-3400, 3600-3800 (See Commodity Classification - Table C)
6700 Plants
6800 Animals (Vertebrates)

RPA 508. DEVELOPMENT OF DOMESTIC MARKETS FOR FARM PRODUCTS

Farm products compete with other goods and services for the consumer's dollar. A few are widely advertised by processors. Many suffer from relatively inadequate presentation of their value to consumers. Some products are not readily available to all consumers or are not available in the forms which consumers desire. When new products are developed, commercialization depends upon evaluation of market potential so as to attract venture capital into their production.

Substantial investments are being made by farmer-supported organizations in an effort to improve farm product merchandising. These groups look to research to evaluate these activities and to guide them to more effective alternatives.

Areas of research include:

(a) Market potential of new products.
(b) Availability of products to users and consumers in the existing marketing system and factors affecting their availability.
(c) Consumer response to alternative advertising, educational and promotional techniques and activities.
(d) Consumer preference studies except as noted below:

Exclude: (1) Research on development of markets and more efficient marketing of timber products. (Use RPA 502).
(2) Research on production of farm products with improved consumer acceptability. (Use RPA 402, 405, or 409).
(3) Research on development of new and improved products. (Use RPA 401, 403, 406, 407, 410, or 411).
(4) Research on specific consumer preference studies on
-- wood products (Use RPA 502)
-- bees and honey (Use RPA 314)
-- recreation (Use RPA 902)
-- fur-bearing animals, fish, etc. (Use RPA 904)
-- trees to enhance environment (Use RPA 905)
-- ornamentals and turf (Use RPA 906).

Classification Guidelines:

Activities:

5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6000 Analysis of supply, demand and price, including interregional competition
6100 Developing domestic markets, including consumer preference and behavior

Commodities, etc.:

0800-1200, 1400-3400, 3600-3800, 4700 (See Commodity Classification - Table C)
6700 Plants
6800 Animals (Vertebrates)

RPA 509. PERFORMANCE OF MARKETING SYSTEMS

Performance is a measure of the consequences or benefits that flow from alternative methods of performing the marketing functions. One such measure has been farm-to-retail price spreads over time for the market in the aggregate, as well as for individual commodities. Changing price spreads provide timely signals of market adjustments. But, an interpretation of the nature of such developments in relation to performance requires exacting analyses of organization characteristics and practices of marketing firms and subsectors. Industry concentration, the occurrence of mergers, various dimensions of integration and diversification and other structural elements are essential ingredients of studies seeking an explanation of market performance.

While structural analyses provide many helpful clues about market performance, they are a step away from the achievement of a total overview that can be gained by regarding the market as a dynamic operating system characterized by interlocking activities and interactions. Economic linkages and interdependencies among market participants need to be identified and the products and outcomes of such configurations translated into various equity interpretations to arrive at conclusions about market performance in the broadest sense. Ideally, performance should be equated with the interests of farmers, marketing firms, capital suppliers, labor, and consumers. In this context, market structure analysis is not an end in itself but rather a major component of a systems approach to market analysis.

Areas of research include:

(a) Simulation and behavioral models of industry systems and subsystems for use in evaluating performance in terms of efficiency and participant equity.
(b) Economic intelligence on the changing structure of marketing systems, including size and number of firms, patterns of ownership, development of integrated and contractual relationships and competitive practices of marketing firms.
(c) Estimates of the aggregate effects of adjustments of individual firms in an industry on costs, prices, and marketing margins.
(d) The effect on market performance of public utility and transportation industry adjustments to public programs, policies, and regulations, e.g. the Interstate Highway System.
(e) Expected effects on the firm of public programs and legal restraints such as licensing, tax regulations, grades and standards, and sanitation requirements.
(f) Effects of market coordination and integration on price determination and on the efficiency of price as an allocative mechanism.

Classification Guidelines:

Activities:

5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0900-1200, 1400-3400, 3600-3900, 4600-4800 (See Commodity Classification - Table C)
6700 Plants
6800 Animals (Vertebrates)

RPA 510. GROUP ACTION AND MARKET POWER

Research on group action and market power is essential to help producers and agricultural marketing, purchasing, and service organizations adjust to a changing agricultural production pattern, a changing market structure, increasing urbanization, and increasing rural, non-farmer residency. Cooperatives, marketing orders and agreements, and other types of group effort offer potential for strengthening or improving the economic and social position of farmers and other rural residents.

Areas of research include:

(a) Effectiveness of alternative forms of group action under different supply, demand, and price relationships.
(b) Design and development of appropriate institutional devices for bargaining.
(c) Role of the individual in group action related to marketing and purchasing.
(d) Effectiveness of organizational structures in serving rural people in relation to ownership control, financial requirements, management capabilities, and market responsibility.
(e) Determination of additional, modified, or new services and techniques that can be used by agricultural and other types of rural associations.

Classification Guidelines:

Activities:

5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
7300 Evaluation of public programs, policies and services

Commodities, etc.:

4600 Farmer cooperatives
4700 Marketing, processing and supply firms other than cooperatives
4800 Marketing systems and sectors thereof

RPA 511. IMPROVEMENT IN AGRICULTURAL STATISTICS

Accurate information concerning production, marketing, and pricing of farm products is essential for research and is needed by farmers, private industry and government for wise decision making. Dynamic changes in the whole fabric of agricultural production, processing and marketing have greatly expanded the amount, precision, and detail of information needed, and introduced new problems of collecting this information. One of the dynamic changes has been the integration of supply, production and marketing functions. With the increase in integration, the points at which meaningful data have traditionally been collected are losing their relevance.

A new structuring of the statistics is essential to bring statistical measures into agreement with the actual production and marketing system. The field of statistics relating to agriculture including farm income and population and market prices of farm products is in need of improvement. Traditional methods of collection and estimation of economic statistics for agriculture cannot produce the data needed to analyze, define and quantify the dynamic changes in agriculture. The reconstruction of the statistical program in terms of content and parameters to be estimated will require much research effort in addition to research in the techniques of effective and efficient data collection.

Areas of research include:

(a) Definitions and concepts needed for statistical purposes, together with establishment of criteria for classifying agricultural enterprises.
(b) Questionnaire and survey design and definitions to reduce non-sampling errors in collection of crop, livestock, yield, production, price, farm labor, and other agricultural data.
(c) Sampling frames - both simple and multiple - to obtain data on yield, production, price, and labor.
(d) Methods of forecasting and estimating yield.
(e) Application of new technology in transmission and data processing.
(f) Use of administrative records associated with various public programs as sampling frames and as sources of data.

Exclude: (1) Research on the application of remote sensing techniques to crop and livestock estimates. (Use RPA 113).

Classification Guidelines:

Activities:

7400 Improvement of agricultural statistics
7500 Development of research equipment and technology

Commodities, etc.:

6400 Experimental design and statistical methods
7000 Research equipment and technology (Such as remote sensing)

RPA 512. IMPROVEMENT OF GRADES AND STANDARDS - FOREST PRODUCTS

Grades and standards describe the characteristics of a product so that producers and processors, and buyers and sellers can gauge product utility. Tree grades provide a means of more effectively valuing growing stock, thus assisting the producer to set specific goals for silvicultural practice and to obtain true value for stumpage. Log grades reduce the uncertainty in product transactions and permit sorting logs for their highest use, to the benefit of both buyer and seller. Standards for processed forest products likewise assist buyers in obtaining product characteristics they desire and sellers in obtaining appropriate compensation for what they sell. Because wood is heterogenous material, the efficiency of wood markets depends to a large degree on a system of accurate and understandable grades and standards.

Areas of research include:

(a) Analysis of the bases for selection of quality criteria used in process and product specifications.
(b) Determining the relationships between product specification, physical characteristics of trees and logs, and process capability.
(c) Developing techniques for evaluating product quality level.
(d) Describing product quality characteristics and variations for which grades and standards should be developed.
(e) Evaluating the effectiveness of particular grades and standards in meeting the requirements of buyers and sellers.

Classification Guidelines:

Activities:

5800 Identification, measurement and maintenance of quality

Commodities, etc.:

0600 Trees, forests and forest products (See subcodes)

RPA 513. SUPPLY, DEMAND AND PRICE ANALYSIS - FOREST PRODUCTS

Improved forecasts of supply, demand, and prices of forest products are essential to more efficient and orderly planning for production and marketing. Individual producers, processing and marketing firms, and end users base decisions upon information about the forecasts of future supply, demand and price conditions. Public policy on forest use is likewise dependent on such information. The forest supply industries need similar data on goods and services purchased by producers so that they may make orderly adjustments to prospective changes in supply, demand and price of production inputs.

Areas of research include:

(a) Development of improved techniques for collection of data.
(b) Effects of changes in supply of individual commodities upon stumpage prices, marketing spread, and consumer prices.
(c) Effects of changes in supply of one commodity upon prices and spreads for a substitute product.
(d) Effects of income, level of education, type of residence and other consumer characteristics on demand.
(e) Effects of such characteristics of supply as variability of production upon user demands.
(f) Seasonal patterns of consumer demands.
(g) Effects of new production and processing technology and technological developments in production of synthetics on demand for forest products.
(h) Impact of current and proposed government programs on supply, demand and price.
(i) Evaluation of methods of collecting data and disseminating market information.

Classification Guidelines:

Activities:

6000 Analysis of supply, demand and price, including interregional competition
7400 Improvement of agricultural statistics

Commodities, etc.:

0600 Trees, forests and forest products (See subcodes)
3600 General purpose supplies (including machinery, equipment, fertilizers, feedstuffs, and pesticides)
3900 Structures and facilities (See subcodes)

GOAL VI

EXPAND EXPORT MARKETS AND ASSIST DEVELOPING NATIONS

Our agricultural products contribute prominently to our balance of payments position. The potential is far greater. We need more and better sales promotion efforts. We need to direct more effort toward producing and marketing to meet specific market preferences and to developing preferences for desirable attributes our products already have. We need much more knowledge of how to establish foreign markets, how to organize production and marketing to meet export demand, and what potential our products have in foreign markets.

Our sense of moral responsibility impels us to help people in need. At the same time our abundant food, fiber, and agricultural technology represent our most effective instrument of foreign policy. Agricultural and forestry technical assistance will help developing nations produce more of their own food needs, contribute to their economic growth, and lead to expanded export markets for us. Our productive capacity can serve a useful and humanitarian purpose in helping to feed hungry people wherever the need exists. Much ingenuity will be required in order to accomplish this humanitarian objective without upsetting world markets and internal economics of the countries involved.

RPA's 601-604, inclusive.

RPA 601. FOREIGN MARKET DEVELOPMENT

Foreign markets are extremely important for U.S. farmers. Agricultural exports use the production from one out of every five acres harvested. Farm product sales abroad account for about one-fifth of all exports and thus make a significant contribution to the U.S. balance-of-payments. However, due to growing protectionism and production increases in foreign countries, U.S. agricultural exports have declined since 1966. This decline raises such questions as: Do we face increased impediments to trade? Is our comparative advantage in agricultural production and trade deteriorating? Because of the importance of export markets and the increased degree of competition for these markets, it is necessary that improved information be made available for use by the U.S. Department of Agriculture and by exporters in developing export strategies.

Areas of research include:

(a) Prediction of trade levels by analysis of current and prospective changes in population, incomes, price levels; domestic agricultural production, and economic development of importing countries; and the development of economic models to predict trade levels.
(b) Effects of regionalization, changing trade policies, and market organizations in importing countries on U.S. agricultural exports.
(c) Effectiveness of promotional programs for expanding foreign markets.
(d) Trade agreements and other government programs as methods of expanding exports of farm products.
(e) Analysis of current and prospective trends in production, trade, and consumption in competitor countries.
(f) Determination of the countries or regions which have a comparative advantage in the production of specific agricultural commodities.
(g) Determination of needs for new and improved products and processing and packaging methods that appeal to the preference of consumers in other countries and better maintain the quality of the product.

Exclude: (1) Research on the development of new and improved products and processes and packaging. (Use RPA 604).

Classification Guidelines:

Activities:

6200 Foreign trade, market development and competition
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0600, 0800-1200, 1400-3400, 3600-3800, 4400, 4500 (See Commodity Classification - Table C)

RPA 602. EVALUATION OF FOREIGN FOOD AID PROGRAMS

Our country is subsidizing large scale exports of food annually to countries that do not have enough foreign exchange to buy this food for their undernourished people. Research is needed to analyze the effects of food aid on economic development, agricultural productivity, and trade of the recipient countries. There is little prospect that domestic production of many developing countries plus commercial imports will be adequate to fill their food and fiber needs for some years to come. Effective food aid from countries with exportable surpluses can permit continued economic development in countries where shortages in food production occur. The local currencies derived from food aid also provide a valuable resource that, under appropriate guidelines, can be used to promote economic development.

Areas of research include:

(a) How food aid can best contribute to the economic development of the recipient country with the least disruption of commercial markets, including those for domestic products.
(b) The probable volume and duration of food aid needed.
(c) The impact on U.S. farm income and relative program cost as a consequence of relaxing our production controls and expanding concessional exports.
(d) Ways of increasing the efficiency of handling food aid in the recipient country, including labor, transportation, and storage.
(e) Use of food aid or local currency receipts from sale of food aid as wage goods in the development of roads, schools, and other public facilities necessary for the development of a modern economy in the recipient country.
(f) Measurement of the extent to which diets in developing countries fall short of minimum nutritional requirements as published in WORLD FOOD BUDGET.

Classification Guidelines:

Activities:

6500 Description, inventory and trends
7300 Evaluation of public programs, policies and services

Commodities, etc.:

4500 Agricultural economy of foreign countries and sectors thereof, including interrelationships with the total economy

RPA 603. TECHNICAL ASSISTANCE TO DEVELOPING COUNTRIES

In recognition of our vital stake in a peaceful and prosperous world, the U.S. has undertaken programs of technical assistance to developing countries. Economic development in most of them, at least in the early stages, is largely a matter of improving the productivity of their agriculture. A developing agriculture supplies a means of capital accumulation, provides an expanding market for the products of other industries, and eventually releases workers to other sectors of the economy.

Areas of research include:

(a) Development of new technology for increasing yields and output of farm products and enhancing marketing and distribution activities through (1) adaptation to local conditions of methods proved effective elsewhere, and (2) developing new methods specifically for use in the developing country or local area.
(b) Determination of conditions that promote or retard improvements in agricultural productivity, such as educational levels, cost-price relationships, availability of improved production technology, and cultural, legal and institutional factors.
(c) Determination of optimum allocation of resources for agricultural vs. non-agricultural development, and for production of farm products for domestic use vs. production of farm products for export.
(d) Ways of choosing, developing, and training native research personnel to staff the developing country's agricultural research and teaching programs.
(e) Evaluation of the effects of educational programs on production practices, nutrition, health, sanitation, housing, and techniques of leadership development.
(f) Contribution to economic development by organizational groups such as cooperatives, service agencies, and youth groups.

Classification Guidelines:

Activities:

4100-7500 (See Activity Classification - Table B)

Commodities, etc.:

0100-7000 (See Commodity Classification - Table C)

RPA 604. PRODUCT DEVELOPMENT AND MARKETING FOR FOREIGN MARKETS

Sales of farm products abroad are an important source of income for American farmers and they contribute substantially to the U.S. balance of payments. Product development and processing is an essential phase of meeting the particular requirements of different foreign groups. In addition processing may serve to reduce transportation costs by putting products in more concentrated forms and eliminating waste portions prior to shipment.

Another vital factor in the competition for foreign markets is efficiency in the performance of the various functions that make up the total process of marketing. The functions include packaging, handling, transportation, and quality maintenance. The marketing abroad of products of agricultural origin poses many problems such as distance, climate, food habits and food safety laws. Success in dealing with these problems requires continuing research.

Areas of research include:

(a) Developing new and improved products that appeal to consumers in foreign countries, and efficient processing methods to derive these products.
(b) Developing supplemental protein foods and various types of fortified foods for use in countries with specific dietary deficiences.
(c) Developing processed foods from plentiful raw materials that will appeal to foreign tastes and induce new food habits.
(d) Modifying existing non-food products obtained from agricultural materials and developing new ones for specific foreign markets.
(e) Developing containers and packages suited to overseas transportation requirements and foreign consumer preferences.
(f) Determining food safety and quality requirements in foreign countries and developing market practices to meet these requirements.

Classification Guidelines:

Activities:

5410 Chemical and physical properties of food
5420 Biochemical and chemical reactions in food
5430 Sensory properties of food
5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging and storage
5700 Developing new and improved non-food products and processes
5800 Identification, measurement and maintenance of quality
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6200 Foreign trade, market development and competition

Commodities, etc.:

0600, 0800-1200, 1400-3400, 3600-3800 (see Commodity Classification - Table C)

GOAL VII

PROTECT CONSUMER HEALTH AND IMPROVE NUTRITION AND WELL BEING OF THE AMERICAN PEOPLE

The public expects agriculture to produce and market foods that it can buy with confidence. This means food that is wholesome and free from harmful pesticide residues, disease agents or toxic substances. While this nation has a food supply that cannot be surpassed for wholesomeness anywhere else in the world, there is ample room for improvement, particularly with respect to microbiological safety and chemical residues. Also, we are concerned with helping people in the selection, construction, and care of clothing and textiles, and in controlling insect pests of man and his belongings.

In spite of our abundant food supply, a large percentage of our families have poor diets. We should be able to reduce this to 1 percent by 2000. We have better knowledge of optimum diets for some of our livestock than for our people. We need to know how to blend our plentiful food supply into better diets for buoyant health and longevity.

RPA's 701-709, inclusive.

RPA 701. INSURE FOOD PRODUCTS FREE OF TOXIC CONTAMINANTS INCLUDING RESIDUES FROM AGRICULTURAL AND OTHER SOURCES

Research on toxic residues of agricultural origin is needed to determine the levels and circumstances under which chemicals may be safely used in crop or livestock production. There is widespread public concern as to the nature and seriousness of the hazards caused by the use of chemicals in the production of farm products. Farmers have a vital stake in the detection and elimination of these hazards because of their possible effects on human health, the resulting hesitancy on the part of consumers to buy certain farm products, and the income loss that may occur if products are not acceptable.

Areas of research include:

(a) Safe levels of residues on or in farm products for human consumption.
(b) The behavior and fate of pesticides and other applied chemicals in and on plants, animals and their products.
(c) The nature and permanence of toxic metabolites produced by plants or animals which have absorbed or consumed pesticides or other chemicals and methods of removing them or reducing their concentration.
(d) Quick and accurate methods for monitoring pesticide residue levels in or on crop and livestock products.
(e) Development of equipment and facilities to reduce or eliminate toxic residues from agricultural sources.

Exclude: (1) Research on safe disposal of pesticide materials. (Use RPA 901).
(2) Research to reduce ingestion of harmful pesticides and other chemicals in or on animal feeds. (Use RPA 213).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
4700 Protection against weeds and their control agents
4830 Protection against pollutants
4880 Protection against allergens, toxins and poisonous plants

Commodities, etc.:

0800-1200, 1400-2000, 2200-2500, 2700-3400, 3800, 6100, 6300, 6700, 6800 (See Commodity Classification - Table C)

RPA 702. PROTECT FOOD AND FEED SUPPLIES FROM HARMFUL MICROORGANISMS AND NATURALLY OCCURRING TOXINS

Agriculture has a responsibility for ensuring the production of foods and feeds which are safe to eat. The United States enjoys a reputation for food supplies that are microbiologically among the safest in the world. Nevertheless, salmonellae, staphylococci, botulini and other harmful microorganisms are a constant threat in inadequately processed or preserved foods and feeds. Mycotoxins, such as those affecting peanuts and naturally occurring toxins such as gossypol also affect food and feed supplies. The Public Health Service has determined that salmonellosis in humans is a significant problem. Agriculture must reduce the risk to man from these and other harmful microorganisms and toxins.

Areas of research include:

(a) Methods for freeing breeding and production herds and flocks of Salmonella and other harmful microorganisms.
(b) Ways to provide livestock and poultry with feeds that are free of harmful microorganisms.
(c) Prevention of transmission of harmful microorganisms from human carriers to livestock and feed or food supplies.
(d) Production of microbiologically safe foods.
(e) Maintenance of microbiological safety in handling, processing, packaging and distributing food products.
(f) Improved methods of food handling, storage, and preparation at home or in institutions for greater microbiological safety.
(g) Methods for preventing or eliminating mycotoxins in peanuts and other field crops.
(h) Methods of preventing, removing or controlling naturally occurring toxins and allergens in agricultural products.

Exclude: (1) Production of field crops with improved acceptability where the objective is to reduce naturally occurring toxins. (Use RPA 405).
(2) Protection of livestock and poultry from poisonous plants. (Use RPA 213).

Classification Guidelines:

Activities:

4830 Protection against pollutants
4870 Protection against molds, fungi and other spoilage organisms
4880 Protection against allergens, toxins and poisonous plants
4890 Protection against radiation, noise and other hazards

Commodities, etc.:

0800-1200, 1400-2000, 2200-2500, 2700-3400, 3600, 3800, 4000, 4100 (See Commodity Classification - Table C)
6200 Seed research
6600 Microorganisms, viruses, etc.
6800 Animals (Vertebrates)

RPA 703. FOOD CHOICES, HABITS, AND CONSUMPTION

Knowledge of what people actually eat and why is limited. The problems in this area are complex and difficult to investigate. Many factors are involved when people make their food choices. Patterns of food consumption have important implications for well-being throughout the life span.

The profile of food choices of people in our country are reflected in food consumption patterns. Knowledge about food consumption patterns is needed to provide the basis for evaluating nutritional adequacy of segments of the population.

Knowledge of food choices and habits of people, ways to motivate people to change where needed, together with food consumption patterns, form the basis for the establishment of educational programs and other action programs to improve nutrition in different groups.

Areas of research include:

(a) The economic, psychological, sociological, and physiological factors associated with age, ethnic and income groups that function as determinants and motivating forces in making food choices.
(b) Food habits, understanding, and misconceptions about nutrition.
(c) Methods of informing people about the relationship of food to health.
(d) Methods of stimulating people to improve their food habits, including analysis of the process of attitude and behavior change.
(e) Food consumption patterns of the nation, and of various population groups.
(f) Evaluation of the effects of programs to improve nutritional status on food choices.
(g) Computer approaches to diet and menu planning.

Classification Guidelines:

Activities:

6310 Nutrient composition of food
6320 Human nutrient requirements
6330 Food fortification, enrichment and improvement
6340 Food consumption patterns and use
6360 Metabolism and function of nutrients in food
6370 Human nutrition and behavior
6380 Human nutritional monitoring and surveillance
6390 Eating quality of food
7000 Design of experiments and methods of statistical analysis
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0800-1200, 1400-2000, 2200-2500, 2700-3400, 3800, 4000, 4100 (See Commodity Classification - Table C)

RPA 704. HOME AND COMMERCIAL FOOD SERVICE

Guidelines are necessary to insure the wholesomeness, nutritional value, taste, appearance and safety of both commercially and home prepared foods. Methods for improved preparation and storage of food that reduce waste, and assure quality and safety of food are needed to increase consumer appeal.

Commercially prepared foods are moving to the public through newly developed channels of distribution. Trends are apparent in automatic vending of more foods; in central preparation of food for large groups; and in more centralization of food preparation for restaurant and home use. Each new development in food preparation requires the determination of factors related to palatability, wholesomeness, safety, and nutritional value and an assurance of consumer acceptance.

Areas of research include:

(a) Factors that achieve the highest quality of food prepared at home or commercially.
(b) Effects of different methods of preparation, holding and serving food on wholesomeness, nutrient content, quality and consumer satisfaction.
(c) Knowledge regarding the effects and interrelationships of factors such as time and temperature in the preparation of food at home or commercially.
(d) Adaptation of computer approaches to food preparation and services.
(e) Development of methods to provide effective, efficient management in institutional and commercial food services.
(f) Development of guidelines for product labeling to improve consumer information about product quality, preparation and storage, nutritional values and unit cost of foods for home and commercial use.

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4600 Protection against diseases, parasites and nematodes and their control agents
5800 Identification, measurement and maintenance of quality
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6310 Nutrient composition of food
6320 Human nutrient requirements
6330 Food fortification, enrichment and improvement
6340 Food consumption patterns and use
6360 Metabolism and function of nutrients in food
6370 Human nutrition and behavior
6380 Human nutritional monitoring and surveillance
6390 Eating quality of food

Commodities, etc.

0800-1200, 1400-2000, 2200-2500, 2700-3400, 3800, 4600-4700 (See Commodity Classification - Table C)

RPA 705. SELECTION AND CARE OF CLOTHING AND HOUSEHOLD TEXTILES

Research on the purchase, use and care of clothing and household textiles is needed to assist consumers in obtaining greater service from products derived from agricultural raw materials. Research is needed to provide knowledge about the products of agriculture used in clothing and household textiles and on the choices that consumers make of these products.

Areas of research include:

(a) Determination of the properties of agricultural fibers which affect consumer satisfaction when such fibers are used in textiles, clothing, and for other household purposes.
(b) Methods of predicting fabric performance in service.
(c) Combinations of fibers and fabrics that will best meet consumer preferences and needs.
(d) Safe, economical and efficient methods of care and maintenance of clothing and household textiles, with emphasis on new developments in fibers and finishes.
(e) Factors influencing consumption patterns for clothing and household textiles of families according to income, and stage in the family cycle, as a basis for developing budgets of expenditures for these items by families.
(f) The effect of drycleaning and laundering on survival of harmful microorganisms and viruses.

Exclude: (1) Research on control of insect pests affecting clothing, carpeting and other textiles. (Use RPA 706).

Classification Guidelines:

Activities:

4830 Protection against pollutants
4870 Protection against molds, fungi, and other spoilage organisms
5100 Increasing consumer acceptability of farm and forest products
5600 Chemical and physical properties of non-food products
5700 Developing new and improved non-food products and processes
6410 Quality of family living
6420 Quality of housing
6450 Quality of management and use of personal, domestic and other resources

Commodities, etc.:

3700 Clothing and textiles

RPA 706. CONTROL OF INSECT PESTS OF MAN AND HIS BELONGINGS

Insects, ticks and mites are known to be vectors of such diseases as encephalitis, malaria, typhus, bubonic plague, and Rocky Mountain Spotted Fever. Mosquitoes, flies and other insects are also a great annoyance to man. Insects cause serious damage to the belongings of man. Included are such pests as clothes moths, roaches and carpet beetles. We need to learn more about the biology of the insects affecting man, and about safe, effective, and economical means of controlling them.

Areas of research include:

(a) Studies on the biology and ecology of the insects, ticks and mites of concern.
(b) Developing attractants and repellents.
(c) Developing biological methods of control.
(d) Developing safer and more effective methods of chemical control.
(e) Developing methods to control insects that damage clothing, rugs, and upholstery; and mosquitoes, roaches, gnats, house flies and sand flies.

Exclude: (1) Studies on the role of insects, ticks and mites in disease transmission. (Use RPA 707).
(2) Research on control of insects affecting stored food products. (Use RPA 404, 408 or 412).
(3) Research on control of insects affecting pets. (Use RPA 210).
(4) Research on control of insects affecting wood products. (Use RPA 401).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4900 Biology of plants and animals

Commodities, etc.:

3700 Clothing and textiles
3900 Structures and facilities (See subcodes)
4000 People as individual workers, consumers, and members of society
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)

RPA 707. PREVENT TRANSMISSION OF ANIMAL DISEASES AND PARASITES TO MAN

Residents of the United States are fortunate that animal diseases transmissible to man have become a relatively low risk. Although much progress has been made in eradicating brucellosis and tuberculosis in cattle, there are many other animal diseases and parasites that represent a potential threat to human health. Among these are anthrax, encephalitis, leptospirosis, rabies, erysipelas, and trichinosis. The latter is probably the most serious, because this parasite is difficult to detect in pork and its presence in this country is a barrier to export sales.

Areas of research include:

(a) Understanding the mechanisms involved in transmission of animal diseases to man, including the role of insects, ticks and mites.
(b) Developing control programs to prevent transmission of animal diseases to man.
(c) Developing means of preventing the transmission of trichinosis to man.
(d) Developing improved procedures, equipment, and facilities for use in red meat and poultry inspection programs.

Exclude: (1) Research on animal disease where the concern is the protection of the animal itself. (Use RPA 211).

Classification Guidelines:

Activities:

4600 Protection against diseases, parasites and nematodes and their control agents
4900 Biology of plants and animals

Commodities, etc.:

4000 People as individual workers, consumers and members of society
4100 The family and its members

RPA 708. HUMAN NUTRITION

Human nutrition research provides fundamental knowledge about the relationship of food eaten by people to their physical and mental status and development and the levels of well-being maintained during the life span. Some research has been conducted on human requirements for nutrients. So many gaps exist, however, that far more research is needed to provide answers to what the human nutrient requirements are and how best to meet those requirements from the food available. Research to support the programs in consumer education and food use is vital to the development of the country.

Areas of research include:

(a) Guidelines for selection of food combinations to meet nutritional requirements.
(b) Methods of evaluating nutritional status.
(c) Determination of the nutrient content of foods.
(d) Methods to quantify the relationship of nutrient intake to well-being.
(e) The relationship of nutrient intake to health, intellectual development, vigor, and longevity.
(f) Requirements for energy, carbohydrate, fat, protein, amino acids, fatty acids, minerals, and vitamins as related to age, sex, activity, and physiological and environmental conditions.
(g) The interrelationships among nutrients as they affect absorption, metabolism, growth and maintenance requirements.
(h) Evaluation of the effectiveness of nutritional phases of programs to improve nutritional status.

Classification Guidelines:

Activities:

5510 Food physical processes (canning, freezing, dehydration, milling, separation, extraction)
5520 Food bioprocesses (enzyme and microbial applications)
5530 Food chemical processes (salt, sugar, acid)
5540 Food processing efficiencies (management of energy, water, wastes)
5550 Food product handling, packaging, and storage
6310 Nutrient composition of food
6320 Human nutrient requirements
6330 Food fortification, enrichment and improvement
6340 Food consumption patterns and use
6360 Metabolism and function of nutrients in food
6370 Human nutrition and behavior
6380 Human nutritional monitoring and surveillance
6390 Eating quality of food
7000 Design of experiments and methods of statistical analysis
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0800-1200, 1400-2000, 2200-2500, 2700-3400, 3800, 4000, 4100 (See Commodity Classification - Table C)
6700 Plants
6800 Animals (Vertebrates)

RPA 709. REDUCTION OF HAZARDS TO HEALTH AND SAFETY

Public Health Service findings indicate that cigarette smoking has a deleterious effect on health. Tobacco growers, manufacturers, distributors, suppliers, exporters, and the consuming public all have a substantial stake in the development of improved cigarettes by reducing or modifying the substances in cigarette smoke which create hazards to good health.

Handling of some agricultural products can cause allergies or other toxic reactions. Some farm supplies may be toxic if inhaled, if accidentally brought in contact with the skin, ingested or otherwise improperly used. Certain concentrations of dusts or fumes from agricultural products or supplies are explosive. Farm and processing equipment must be used correctly and effectively shielded to prevent accidents. Safety is an essential ingredient of sound agriculture.

Areas of research include:

(a) Improvement of analytical methods for determining the constituents of tobacco and tobacco smoke.
(b) Isolation and identification of the components of tobacco and tobacco smoke that may be injurious to human health.
(c) Developing methods to eliminate or deactivate injurious components of tobacco smoke.
(d) Developing methods to detect and to avoid the harmful effects of toxic residues and harmful mycotoxins in tobacco.
(e) Developing methods for the safe handling of farm products, supplies, and livestock.
(f) Determining the need for protective devices and procedures for safe usage of farm machinery and equipment.
(g) Determining the nature, frequency, and causes of farm accidents.
(h) Developing methods to reduce fire risks and to improve fire control measures for cotton gins, barns, and other farm structures.
(i) Determining risks and developing needed safety measures for product handling in processing plants and marketing channels.

Exclude: (1) Research on toxic residues on food products. (Use RPA 701).
(2) Research on harmful microorganisms and naturally occurring toxins in food. (Use RPA 702).
(3) Research on disease transmission. (Use RPA 707).

Classification Guidelines:

Activities:

4810 Protection against fire
4830 Protection against pollutants
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
4880 Protection against allergens, toxins and poisonous plants
4890 Protection against radiation, noise and other hazards

RPA 709. (Continued)

Commodities, etc.:

1400 Corn (including popcorn, for sweetcorn see 1280)
1700 Wheat (See subcodes)
2100 Cotton (including cottonseed for planting purposes)
2300 Soybeans
2600 Tobacco (See subcodes)
2800 Miscellaneous and new crops (See subcodes)
3600 General purpose supplies (including machinery, equipment, fertilizers, feedstuffs, and pesticides)
3700 Clothing and textiles
3900 Structures and facilities (See subcodes)
4000 People as individual workers, consumers and members of society
4100 The family and its members

GOAL VIII

ASSIST RURAL AMERICANS TO IMPROVE THEIR LEVEL OF LIVING

Median farm family income, as well as rural non-farm family income, lags far behind that of urban families. Ways must be found to assist rural people in adjusting to structural changes in agriculture and to balance farm output and market demand. This income disparity also can be reduced by improving the economic potential of rural youth and adults. Also needed is information on how to use money and other resources to achieve desired goals without losing the uniquely desirable aspects of rural life.

RPA's 801-808, inclusive.

RPA 801. HOUSING

Housing, as individual units and collectively, has a significant impact on the quality of living. Tremendous opportunities exist for research to reveal effective, economical procedures and materials for renovating and modernizing existing houses as well as in design and development of new housing.

Areas of research include:

(a) Determine family housing requirements on the basis of selected characteristics such as age, income, size; stage in the family cycle; health, occupation, and ethnic background.
(b) Determine the community, regional, and national needs for housing on the basis of the needs of various kinds of families and the current status of housing. Special consideration should be directed to migrants, the aged, low income groups and the physically handicapped.
(c) Determine the effect of the housing environment on the development of people.
(d) Determine costs and benefits of construction systems and materials giving special attention to consumer needs and overcoming market obstacles.
(e) Study credit availability and financing arrangements and develop improved credit systems which will provide adequate financing for the renovation of houses and construction of new homes.
(f) Select and develop improved designs, materials and construction methods for both renovation and new construction. Include possibilities for inputs by the homeowner and employees with limited skills and/or training.
(g) Review and develop building codes and other legal requirements which provide appropriate safeguards to the individual and the community without imposing unnecessary obstacles to efficient, economical construction.
(h) Consider maintenance needs and develop convenient, economical ways to meet these needs. This should include consideration of the possibilities of inputs by the homeowner.
(i) Determine and correct the factors contributing to deterioration of housing structures.

Exclude: (1) Development and consideration of the impact of alternative public policies to create incentives for rural living. (Use RPA 907 and 908).
(2) Research on housing for animals. (Use RPA 317).

Classification Guidelines:

Activities:

4500 Protection against insects, mites, snails and slugs and their control agents
4810 Protection against fire
4820 Protection against flood
4830 Protection against pollutants
4840 Protection against climatic extremes (frost, hail, wind, drought, etc.)
4850 Protection against birds
4860 Protection against rodents and other mammals
4870 Protection against molds, fungi and other spoilage organisms
4890 Protection against radiation, noise and other hazards
6100 Developing domestic markets, including consumer preference and behavior
6410 Quality of family living
6420 Quality of housing
6430 Improvement of domestic and community water and waste systems

RPA 801. (Continued)

Activities (Continued)

6450 Quality of management and use of personal, domestic and other resources
6500 Description, inventory and trends
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change

Commodities, etc.:

0600 Trees, forests, and forest products (See subcodes)
3900 Structures and facilities (See subcodes)
4000 People as individual workers, consumers and members of society
4100 The family and its members

RPA 802. INDIVIDUAL AND FAMILY DECISION MAKING AND RESOURCE USE AND FAMILY FUNCTIONING

Families and individuals are concerned with social and economic decision making. Social decisions encompass some of the major turning points in family development... the life plans of children and the fulfillment of aspirations. Social decisions involve making the most of human resources such as intelligence, special talents and skills, and special motivations.

Economic decisions are concerned with financial, material and community resources. These may be wages and salaries, goods in kind, public services, or earnings from farm or other businesses. Allocations must be made to provide for current living, investment or capital accumulation.

Quality of family life is highly dependent upon both economic and social decisions; upon task performance and family role behavior, including consumer, parental and wage-earning roles; and upon the interaction of family members both within the family and with others. Knowledge gained from research will provide a basis for assisting families to improve the quality of living.

Areas of research include:

(a) Factors involved in the decision making process and decisions as affected by availability of resources, stage in the life cycle, living patterns, values, goals, interests and attitudes.
(b) Consumer behavior and effect of consumer decision making on the quality of life of individuals and families.
(c) Allocation of resources by individuals and families and resulting consumption patterns and level of living.
(d) Guidelines for "minimum decency" levels of living, including "market basket" cost of goods and services for various residence situations.
(e) Family task requirements and ways to improve performance.
(f) Identification of structural, functional and environmental factors contributing to family life patterns and performance.
(g) Family roles as influenced by subcultural, economic, social and attitudinal factors, and effect on family cohesiveness and human organization.
(h) Factors influencing interaction of family members and communication between family members and others.

Classification Guidelines:

Activities:

6410 Quality of family living
6420 Quality of housing
6430 Improvement of domestic and community water and waste systems
6450 Quality of management and use of personal, domestic and other resources
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change

Commodities, etc.:

4000 People as individual workers, consumers and members of society
4100 The family and its members

RPA 803. CAUSES OF POVERTY AMONG RURAL PEOPLE

Research is needed to discover the underlying social, educational, psychological, nutritional, physical, and economic factors that explain why a significant proportion of people in rural areas are in poverty. Nearly half the people with poverty-level incomes in the United States are in rural areas. Little is known of how the poverty cycle can be broken or how those isolated in poverty can be aided in their own development and in finding and taking advantage of social and economic opportunities.

Areas of research include:

(a) The characteristics of the rural poor: their physical, educational, economic, and personal resources; their attitudes and interests through which they can be stimulated to improve their situation; their resources, income, and levels of living; and their ability and willingness to migrate to areas with greater economic potential.
(b) Conditions that give rise to and perpetuate poverty, such as poor health and malnutrition, occupational displacement, mental and physical handicaps, limiting family and community circumstances, inadequate educational preparation, and personal and family catastrophe.
(c) The factors related to, and the processes by which, some individuals and families have overcome their poverty backgrounds and achieved socio-economic well-being.

Exclude: (1) Research on improvement of economic potential of rural people. (Use RPA 804).
(2) Research on improving income opportunities in rural communities. (Use RPA 907).

Classification Guidelines:

Activities:

6500 Description, inventory and trends
6600 Economic development and adjustment
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change
7300 Evaluation of public programs, policies and services

Commodities, etc.:

4000 People as individual workers, consumers and members of society
4100 The family and its members
4300 Communities, areas and regions, including counties and states and their institutions and organizations

RPA 804. IMPROVEMENT OF ECONOMIC POTENTIAL OF RURAL PEOPLE

Research is needed to provide knowledge which will help people improve their economic potential, enable them to identify and develop their employable skills, and find satisfying employment in the occupation that uses those skills most effectively. In the next few years most rural youth seeking first employment will need to find jobs in non-farm occupations.

Areas of research include:

(a) Developing information on the requirements for success in various occupational alternatives, including education, experience, and financial resources.
(b) Developing programs to provide education, training, and retraining needed by rural youth and adults to take advantage of farm and non-farm employment opportunities.
(c) Determining ways to raise the level of aspirations of rural youth and to motivate them to acquire necessary training and education.
(d) Determining opportunities for operators of low-income farms to improve their situation through adjustments to improve farm income, combining farming with part-time non-farm work, or working full-time at a non-farm job or business.

Exclude: (1) Research to improve income opportunities in rural communities. (Use RPA 907).

Classification Guidelines:

Activities:

6500 Description, inventory and trends
6600 Economic development and adjustment
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change

Commodities, etc.:

4000 People as individual workers, consumers and members of society
4100 The family and its members
4300 Communities, areas and regions, including counties and states and their institutions

RPA 805. COMMUNICATION AND EDUCATION PROCESSES

Effective communication is vital to the educational process, the dissemination of knowledge, development of sound public policy, successful conduct of public programs, and development of understanding among groups in our society.

Research on communication will assist in obtaining agreement on the most important problems; gaining public support for research on the problems; and reducing the time lag between discovery and development and the adoption of improved practices and products.

Research on education processes is needed to determine effective ways to achieve educational goals.

Areas of research include:

(a) Determining the various forms and combinations of mass media, group and person-to-person contacts most effective for various types of persons and groups of persons and for different kinds of information to be communicated.
(b) Developing techniques, procedures, and educational processes for effectively communicating information to people with varying backgrounds and skills.
(c) Developing effective ways of reaching individuals and families and motivating them to utilize available information, resources and technology that may affect their economic, social, and physical well-being.

Classification Guidelines:

Activities:

6310 Nutrient composition of food
6320 Human nutrient requirements
6330 Food fortification, enrichment and improvement
6340 Food consumption patterns and use
6360 Metabolism and function of nutrients in food
6370 Human nutrition and behavior
6380 Human nutritional monitoring and surveillance
6390 Eating quality of food
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change
7200 Information documentation and retrieval
7300 Evaluation of public programs, policies and services

Commodities, etc.:

4000 People as individual workers, consumers and members of society
4100 The family and its members
4300 Communities, areas and regions, including counties and states and their institutions and organizations

RPA 806. INDIVIDUAL AND FAMILY ADJUSTMENT TO CHANGE

The quickening pace of technological, economic and social change increases the difficulties of many families in making successful adjustments. What was predominantly a rural economy has been transformed to a transitional society having many urban characteristics. These changes and those involved in farm-non-farm or rural-urban migration often require major social, psychological, and economic adjustments by individuals and families, some of which are very stressful and disorganizing. People who fail to make successful adjustments, often those who are poorly educated and with limited employable skills, present critical problems.

Areas of research include:

(a) Basic occupational skills and personal competencies needed by rural people to continue to be productive and lead satisfying lives in a changing environment.
(b) Ways in which individuals and families can be motivated and helped to meet changes in economic and social conditions, especially those involved in a transition from a farm to a non-farm or rural to urban environment.
(c) Useful alternatives in dealing with problems of occupational displacement and economic, educational, psychological, mental and physical handicaps.
(d) Understanding the role of the family and developing ways to help families cope with the demands of modern society.
(e) Composition and trends in farm and rural population.
(f) Migration patterns of the farm and rural population.
(g) Identifying factors within the family and the general environment that influence the development of individuals including social, mental, physical, and emotional growth and well-being.

Exclude: (1) Research on the causes and alleviation of poverty. (Use RPA 803, 804 and 907).

Classification Guidelines:

Activities:

6500 Description, inventory and trends
6600 Economic development and adjustment
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change

Commodities, etc.:

4000 People as individual workers, consumers and members of society
4100 The family and its members
4300 Communities, areas and regions, including counties and states and their institutions and organizations

RPA 807. STRUCTURAL CHANGES IN AGRICULTURE

Research provides an understanding of the significance of changes taking place in the organization and structure of the agricultural industry. Among these changes are the trend toward fewer and larger farms; the greater specialization of production; the use of vertical coordination arrangements, and accompanying shifts of functions from farm to non-farm firms; the status of the farm labor force; and changes in the managerial status of the farm operator.

The study of structural changes in agriculture provides information that is essential for accurate projections of: (1) supply responses to changes in price-cost conditions; (2) demand for production inputs; and (3) farmer participation in various types of organization. In addition, an understanding of changes in the structure of agriculture is basic to sound agricultural program development, both in appraising the probable degree of participation in the program, and its impact on output and farm incomes.

Areas of research include:

(a) Assembling and analyzing data on current and prospective trends in numbers of farms, by size, type, tenure and managerial status, and region. Estimating, for homogeneous groups of farms, averages such as the following: total investment, labor force, inputs, costs, production, gross income and net income.
(b) The extent and forms of vertical coordination and other arrangements between farm and non-farm firms and the associated transfer of functions from farm to supply, processing, or marketing firms.
(c) Interrelationships between changes in the structure of agriculture and the status and composition of its labor force, including the effects of increasing wage levels and wage and hour legislation on capital-labor substitution in agriculture.
(d) Changes in the financial structure of agriculture; management and ownership of and equity in farm resources.
(e) Developing alternative proposals and procedures which will encourage desirable structural changes in agriculture.

Classification Guidelines:

Activities:

5300 Management of labor, capital and other inputs
6000 Analysis of supply, demand and price, including interregional competition
6500 Description, inventory and trends
6600 Economic development and adjustment
7200 Information documentation and retrieval
7300 Evaluation of public programs, policies and services

Commodities, etc.:

2100, 2600, 2900-3400 (See Commodity Classification - Table C)
4200, 4300, 4400 (See Commodity Classification - Table C)
4600 Farmer cooperatives
4700 Marketing, processing and supply firms other than cooperatives
4800 Marketing systems and sectors thereof

RPA 808. GOVERNMENT PROGRAMS TO BALANCE FARM OUTPUT AND MARKET DEMAND

The demand for most farm products is highly inelastic. Hence, in a free market, small percentage changes in supply may cause much greater percentage changes in price. Because of the nature of crop and livestock production these fluctuations in supply cannot readily be avoided. The resulting price fluctuations in turn, introduce additional instability into the market. Among the premises of price-support and production-control programs are these: (1) in a free market, it is difficult to balance farm output with market demand at stable prices, and (2) that the interests of both producers and consumers are better served by orderly markets than by unstable ones.

Areas of research include:

(a) Developing effective ways to stabilize farm prices and incomes through government purchases of farm products, and storage of surplus stocks against periods of short supply.
(b) Developing effective and acceptable supply restraints and production incentives for use as needed.
(c) Developing an economic model to predict the response of farmers to various economic influences, including U.S. Department of Agriculture programs for balancing supply and supporting prices, cropland adjustments, and incentive payments. This type of analysis assists policy makers in selecting program alternatives with greater certainty of attaining farm program goals at minimum costs.
(d) Determining the effectiveness of alternative arrangements for administering government programs.

Classification Guidelines:

Activities:

5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
6600 Economic development and adjustment
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0600-1200, 1400-3400 (See Commodity Classification - Table C)
4200 The farm as a business enterprise
4400 Agricultural economy of United States and sectors thereof including interrelationships with the total economy
4800 Marketing systems and sectors thereof
6700 Plants
6800 Animals (Vertebrates)

GOAL IX

PROMOTE COMMUNITY IMPROVEMENT INCLUDING DEVELOPMENT OF BEAUTY, RECREATION, ENVIRONMENT, ECONOMIC OPPORTUNITY, AND PUBLIC SERVICES

Achievement of many aspirations depends upon group action at local, State, and Federal levels to make desired services available. To a considerable measure, availability to individuals of utilities, health services, opportunities for education, employment, and recreation depend upon community action. Community groups, private and public, need facts as a basis for programs that lead to group satisfaction from joint use of economic and natural resources.

RPA's 901-908, inclusive.

RPA 901. ALLEVIATION OF SOIL, WATER, AND AIR POLLUTION AND DISPOSAL OF WASTES

Soil, water, and air are being polluted with a variety of substances, both inorganic and organic. Some of the contaminants in addition to those of industrial origin are organic pesticides, radionuclides in fertilizers, growth regulating chemicals, animal and crop wastes, mulching materials, pathogenic microorganisms, heavy metals, salts used on roads for de-icing, lead from fuel combustion, allergens, and radioactive fallout. Agricultural research must be primarily concerned with alleviating pollution initiated by agricultural and forestry practices.

Areas of research include:

(a) The character, intensity, and causes of pollution from agricultural and forest practices and the frequency of their occurrence.
(b) The behavior and fate of pesticides and a wide variety of other pollutants in air, soil and water.
(c) Methodology and instrumentation for detection of pollutants and methods of analysis.
(d) Public policy that would reduce pollution.
(e) Alternative methods of reducing and controlling pollution to levels that are not harmful to man, plants, or animals; or methods that will prevent emission of the pollutant.
(f) The role and use of living organisms in removing pollutants from the environment.
(g) Minimum environmental quality standards for human, animal, and plant health.
(h) Methods of collecting, storing, moving and disposing of animal, plant, and radioactive wastes including those from processing plants.
(i) Alleviating odors, dust, and noise.
(j) Developing useful products from wastes to help offset the costs of disposal.
(k) Safe methods of disposing of pesticides and other agricultural chemicals and containers of such materials.
(l) Aquatic weeds as a pollutant.

Exclude: (1) Research on the protection of plants, animals, and man from harmful effects of pollution. (Use RPA 214).

Classification Guidelines:

Activities:

4300 Resource development, conservation and management
4400 Evaluation of alternative uses and methods of use
4830 Protection against pollutants
4880 Protection against allergens, toxins and poisonous plants
4890 Protection against radiation, noise and other hazards
5900 Improving economic and physical efficiency in marketing including analysis of market structure and functions
7300 Evaluation of public programs, policies and services

RPA 901. (Continued)

Commodities, etc.:

0100 Soil and land
0200 Water
0300 Watersheds and river basins (See subcodes)
0400 Air and climate
0600 Trees, forests and forest products (See subcodes)
0800-3400, 3600, 3900 (See Commodity Classification - Table C)
3800 Food (not readily associated with specific plant and animal products)
6100 Weeds
6600 Microorganisms, viruses, etc.
6700 Plants
6800 Animals (Vertebrates)

The general intent of this RPA is to alleviate soil, water and air pollution. The resource being protected is thus 0100-0400 (see above) one or more of which should be listed as the commodity or resource on Form AD-417. For those projects primarily on developing a way to dispose of a particular kind of waste, the appropriate crop or animal commodity, 0600, 0800-3400, 3600, 3800, 3900, 6100, 6600, 6700, or 6800 (See Commodity Classification - Table C) should be listed on Form AD-417.

RPA 902. OUTDOOR RECREATION

Outdoor recreational research provides information to guide the management of rural lands for recreation, and to help coordinate this use with other land resource uses. The research involves problems in management of the resource and socio-economic relationships of users to the resource. Demands for recreation continue to increase, and are becoming more varied and more complex, at a time when pressure on all land resources is increasing.

Areas of research include:

(a) Determining the demand for outdoor recreation.
(b) Criteria for selecting sites which will attract and support heavy recreation use.
(c) Developing practical methods to maintain existing recreation sites and restoring those depleted by heavy use.
(d) Requirements for aesthetic landscapes and means for producing and maintaining them.
(e) Methods for the protection, management, and recreational use of wilderness-type historical and archeological areas and scenic landscapes.
(f) Management systems and special equipment, and facilities which will minimize dangers from fire, avalanches and other natural hazards.
(g) Understanding of visitor preferences and attitudes regarding outdoor recreation opportunities.

Classification Guidelines:

Activities:

4100 Resource description and inventory
4300 Resource development, conservation and management
4500 Protection against insects, mites, snails and slugs and their control agents
4700 Protection against weeds and their control agents
6500 Description, inventory and trends
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0500 Recreational resources (See subcodes)
0600 Trees, forests, and forest products (See subcodes)
4300 Communities, areas and regions, including counties and states and their institutions and organizations

RPA 903. MULTIPLE USE POTENTIAL OF FOREST LAND AND EVALUATION OF FORESTRY PROGRAMS

Most forest areas and related resources can be devoted to widely varying uses depending on the owner's objective and the allocation of investments for resource development. On more than 300 million acres of National Forests and other public lands, for example, guidelines are needed to determine the best combination of uses or systems of managing forest land for timber, water, forage, recreation, wildlife or other purposes.

Forestry programs to increase production of timber and related forest resources need to be evaluated to determine their relative costs and effectiveness. These programs cover a wide range of activities including protection against fire, insects and disease; reforestation; timber stand improvement; and improved timber harvesting.

Areas of research include:

(a) Determining the relative efficiency of various combinations of measures and programs to meet projected demands for timber and other forest-based products and services.
(b) Adapting basic data on output potentials and operational guidelines provided by timber range, recreational, and wildlife research for use in analyzing multiple use management plans and programs.
(c) Evaluating the response of forest owners and operators to various types of public and private forestry assistance programs.
(d) Developing procedures and criteria for evaluating the relative costs and benefits of alternative forest land uses and combinations.

Exclude: (1) Research on the economics of timber production per se. (Use RPA 303).

Classification Guidelines:

Activities:

4300 Resource development, conservation and management
4400 Evaluation of alternative uses and methods of use
7300 Evaluation of public programs, policies and services

Commodities, etc.:

0300 Watersheds and river basins (See subcodes)
0500 Recreational resources (See subcodes)
0600 Trees, forests, and forest products (See subcodes)
0700 Range
0800 Fish, shellfish, game and fur-bearing animals and other wildlife and their habitats (See subcodes)

RPA 904. FISH AND OTHER AQUATIC LIFE, FUR-BEARING ANIMALS AND OTHER WILDLIFE

Research on wildlife, fur-bearing animals, fish and other aquatic life is needed to meet the ever growing demands of hunters, trappers, and fishermen; to develop improved production of farm reared fish and fur-bearing animals; to assure continuing supplies of aquatic life for food and other purposes, and to meet increasing demands for aesthetic values such as non-game wildlife.

To maintain and increase the supply of wildlife, fish, and other aquatic life it is essential to know how to maintain and enhance their habitat, and to determine the biological requirements and relationships of each species, including cover and food for normal growth.

Increased knowledge of fish biology and production requirements and techniques is needed to service the needs of the increasingly important fish farming industry. This includes fish, crayfish and other aquatic life in either fresh or salt water.

Areas of research include:

(a) The life histories and population dynamics of fish, fur-bearing animals, and wildlife, including non-game and vanishing species and aquatic organisms and of plants that provide food and shelter.
(b) The ecological and physiological requirements of fish, fur-bearing animals, wildlife, and other aquatic life.
(c) Adaptation of plants to sites and selection and genetic improvement of both native and exotic food and cover plants.
(d) Improving wildlife habitat through such measures as seeding, planting, prescribed burning, spraying, fertilizing and manipulation of native vegetation.
(e) Improving fish habitat and food supplies through management of streamside vegetation, channel stabilization and creation of spawning beds.
(f) Breeding, selection, feeding, and management of wildlife and fur-bearing animals.
(g) Breeding, selection, management and feeding of fish and other aquatic animals for commercial production (fish farming).
(h) The biology and environmental requirements of aquatic life and possibilities of environmental control.
(i) Protection against insects, diseases and other hazards, except pollutants.
(j) Marketing studies related to any of the above commodities.

Exclude: (1) Research on protection of aquatic organisms, fish and wildlife against pollutants. (Use RPA 214).
(2) Research on new and improved animal products. (Use RPA 410 or 411).
(3) Research on quality maintenance in marketing animal products. (Use RPA 412).
(4) Grades and standards. (Use RPA 501).
(5) Supply, demand and price analysis. (Use RPA 506).

Classification Guidelines:

Activities:

4100, 4300-5600, 5800-6390, 7300 (See Activity Classification - Table B)

RPA 904. (Continued)

Commodities, etc.:

0600 Trees, forests, and forest products (See subcodes)
0700 Range
0800 Fish, shellfish, game and fur-bearing animals and other wildlife and their habitats (See subcodes)
3600 General purpose supplies (including machinery, equipment, fertilizers, feedstuffs, and pesticides)
3900 Structures and facilities (See subcodes)
6500 Invertebrates (including insects, mites, ticks, snails, slugs, and leeches)

RPA 905. TREES TO ENHANCE RURAL AND URBAN ENVIRONMENT

This research provides some of the scientific knowledge required to maintain or improve the quality of the rural and urban environment, and to enhance natural beauty through special-purpose tree planting. Technological change is multiplying the need for special tree planting to screen junkyards and highways, suppress noise, slow the movement of dust and debris, and to provide trees for shade, beauty and shelterbelts to protect crops, animals and farmsteads. Research is needed to find species and techniques so that trees can survive smoke and air pollution, compacted soils, deficient or excessive moisture, and other adverse conditions. The end product of concern in this research is a standing tree to enhance the environment.

Areas of research include:

(a) Selection and breeding of trees for urban environments, for shelterbelts, shade and other special purposes.
(b) Protection from insects, diseases and other hazards through cultural, biological or chemical means.
(c) Methods of site preparation and planting appropriate for special-purpose tree planting.
(d) Culture and maintenance or urban trees and stands.
(e) Culture and improvement of shelterbelts.
(f) Marketing or nursery stock of trees used to enhance the environment.
(g) Soil and site requirements of species needed to improve the environment.

Classification Guidelines:

Activities:

4300, 4500-5300, 5800-6200 (See Activity Classification - Table B)

Commodities, etc.:

0600 Trees, forests, and forest products (See subcodes)
0700 Range
1300 Ornamentals and turf (See subcodes)

RPA 906. CULTURE AND PROTECTION OF ORNAMENTALS AND TURF

More efficient production and new varieties of flowers, ornamental plants and turf are needed today for city and suburban gardeners and for the national beautification effort. Ornamental plants resistant to insects, drought, flood, diseases, traffic, and the competition of weeds are needed for highway and railway rights-of-way and other areas where intensive care is not possible.

The floricultural and nursery industries, and owners and managers of parks and golf courses have many unsolved problems. Costs of protecting ornamentals against insects, diseases and weeds are high, and losses due to decreased production are substantial. Problems of maintaining quality during transporting, storing and marketing ornamentals are important. Christmas trees (0611) shade trees (0615, 0624, and 0625), and shelterbelts and windbreaks (0631) are not classified as ornamentals.

Areas of research include:

(a) Breeding and selection to enhance aesthetic and special use characteristics.
(b) Breeding and selection for hardiness and resistance to drought, insects, diseases, and other hazards.
(c) Methods for protection from insects, diseases, weeds, and other hazards.
(d) Improved methods of propagation, culture and care.
(e) Improve marketing and handling, transportation and packaging.
(f) Optimum methods and materials for fertilizing and watering ornamentals and turf.

Exclude: (1) Research on Christmas trees, ornamental and shade trees and shelterbelts and windbreaks. (Use RPA's 110, 111, 201, 202, 214, 301-303, 401, 502, 511-513).

Classification Guidelines:

Activities:

4300, 4500-5300, 5600-6200, 6410, 6420, 6450 (See Activity Classification - Table B)

Commodities, etc.:

1000 Deciduous and small fruits and edible tree nuts (See subcodes)
1300 Ornamentals and turf (See subcodes)

RPA 907. IMPROVED INCOME OPPORTUNITIES IN RURAL COMMUNITIES

Research on income improvement in rural communities will identify ways by which depressed areas can attain full economic potential. Only by providing adequate income opportunities can these communities retain more of their young people and finance the kind of public and private facilities and services that make them attractive places to live. Accelerated economic development of depressed rural areas is of vital concern to many large urban centers, which are not equipped to assimilate the flood of rural migrants they receive.

Areas of research include:

(a) Criteria for delineating functional socio-economic areas for planning in order to achieve effective economic development in an area.
(b) Developing a set of economic indicators for rural areas.
(c) The process of economic growth and the influences that shape it, including the resource base of the area and its locational advantages and disadvantages.
(d) Analysis of the comparative economic advantage for agriculture and industry and the prospects of increasing local employment opportunities and providing a more adequate tax base for the support of community services.
(e) Potential for further development of agricultural and forest resources in rural areas, including the associated supply, processing and marketing facilities.
(f) Farm and community income possibilities from the development of new and expanded enterprises including raising pets, horses, and laboratory animals, and development of fee hunting and fishing and other recreation areas.
(g) Potential contribution of improved transportation facilities in bringing desirable employment opportunities within commuting reach of residents of rural communities.
(h) The kinds of public programs needed to stimulate rural community development and the effectiveness of existing programs in accomplishing this objective.
(i) Factors associated with the occurrence of depressed areas, and policy measures that might have prevented such areas from falling behind the rest of the economy.

Classification Guidelines:

Activities:

6500 Description, inventory and trends
6600 Economic development and adjustment
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change
7000 Design of experiments and methods of statistical analysis
7200 Information documentation and retrieval
7300 Evaluation of public programs, policies and services

Commodities, etc.:

4000 People as individual workers, consumers and members of society
4100 The family and its members
4300 Communities, areas and regions, including counties and states and their institutions and organizations

RPA 908. IMPROVEMENT OF RURAL COMMUNITY INSTITUTIONS AND SERVICES

Rural communities need information to help develop the organization, agencies, services, and leadership which will make them attractive places to live, work and establish businesses.

Some rural communities are experiencing sharp increases or decreases in population. Modern transportation and communication have contributed to the development of trading and social centers serving large geographic areas, and have caused the decline or elimination of a great many small centers. Uncoordinated development and other changes in land use often make it impossible to provide public services economically.

Areas of research include:

(a) Criteria for delineating functional socio-economic areas in order to provide effective and efficient community institutions and services.
(b) Measuring the adequacy, quality, and cost of education, health, sanitation, and water systems, and other public and private services.
(c) The organizational and operational efficiency of local government units in meeting the needs of modern rural society.
(d) Effective protection of the community's interest in changes in land use through zoning and other means, including suburban development and industrial and agricultural uses.
(e) Effective development, coordination, and adaptation of the various services, agencies, and organizations to best meet the community's needs.

Classification Guidelines:

Activities:

6430 Improvement of domestic and community water and waste systems
6500 Description, inventory and trends
6600 Economic development and adjustment
6710 Improvement of social well-being
6720 Improvement of social services and facilities
6730 Community, family and individual adjustment to social change
6740 Community, family and individual adjustment to economic change
7300 Evaluation of public programs, policies and services

Commodities, etc.:

4300 Communities, areas and regions, including counties and states and their institutions and organizations

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